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Economies in a Railroad Repair Shop

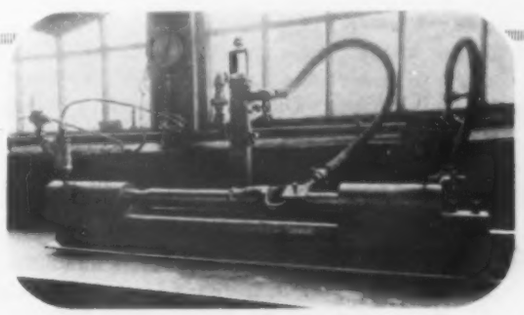
Using Special Testing Appliances—Reclaiming Worn Steel and Tools—Acetylene Welding Equipment—Cost Keeping Machines Employed

BY L. S. LOVE

SUPPLEMENTING an article in THE IRON AGE of March 29 emphasizing the way production methods of the large modern manufacturing plant have been successfully introduced in the shops of an important Eastern railroad and continuing an article in the issue of May 10, in which was outlined what that railroad had done to expedite repairs by practices deserving of adoption by other railroads, are offered the accompanying reproductions of photographs to show some of the other economies effected by that railroad. The following brief explanations will serve in conjunction with the illustrations.

To facilitate lining up, a special trammel with micrometer adjustment was developed for use in laying out rods and shoes and wedges. This consists of a shaft with two sliding pointers, each with a binder screw. One pointer is mounted on a sleeve which binds to the shaft. The pointer on this sleeve is moved by a screw collar which is graduated and when the pointer is set to the proper point, it is held with a binder screw.

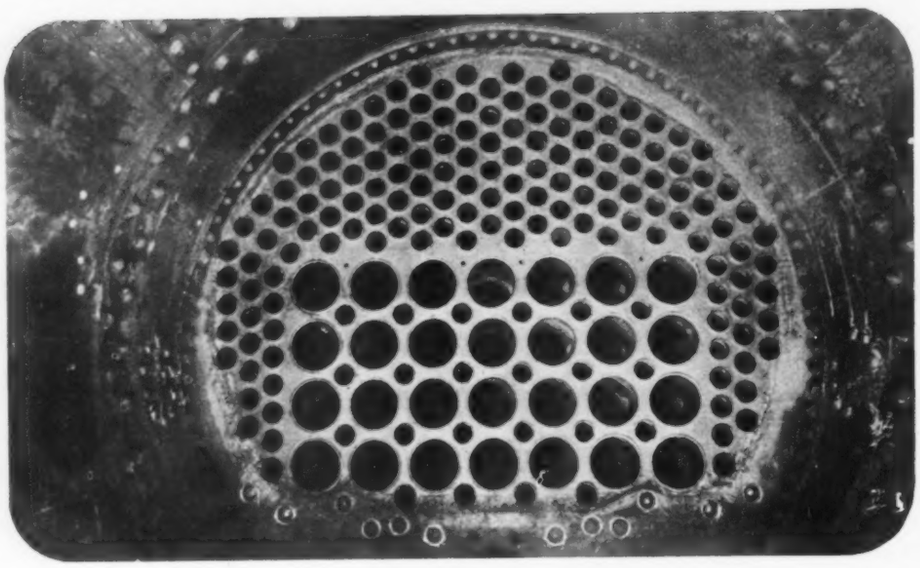
To Test Air Motors a Brake Is Employed with Gage and an Air Meter for Estimating the Horsepower Developed in Relation to the Consumption of Air



For Air Hammers the Device Measures the Force and Number of Blows in Relation to the Air Consumption. Defective pneumatic tools are repaired or scrapped

A Stand was Built for Testing the Performance of Reversing Valve Gears Before Applying to the Locomotives

To secure full efficiency, pneumatic tools are tested periodically. Air motors are run against a brake with gage and air meter and the horsepower is calculated. This is checked against air consumption. Air ham-



Oxy-Acetylene Welding Is Used in Repairing Frames Which Have Been Cracked, Doing the Work Without Delaying Regular Repairs. Piston rods worn in the fit are built up by welding and returned and fitted. Crucibles are made of ¼-in. boiler plate and welded and lined with Hytempite. In welding the front flue sheet, the old sheet is cut out with the flame, leaving the sheet angle and rivets in place

mers are tested for force of blow as compared with air consumption. If motors or hammers show too high air consumption for power delivered, they are repaired or scrapped, depending upon the general condition they are in. A special stand has also been built for testing valve motions before they are mounted on the locomotive.

In the rearrangement of the shop, approximately 3 tons of tool steel was reclaimed from obsolete and worn out tools in the toolroom. This was possible with the modern checking system which showed which tools were of use and which not. Flat twist drills were converted for use in taper hole spindles by using a taper shank slotted to receive the flat drill; a collar shrunk on held the drill in place. Old punches instead of being thrown away are turned down and used in a supplementary punch holder with backing disks to make up the required length. Inserts are made of high-speed alloy.

It was formerly the custom to employ four men with obsolete equipment to flange flue sheets and boiler work. A modern flanging machine makes it possible to do work in one-third of the former time with one man and two helpers.

An obsolete type of link grinder has been replaced by a modern machine which is showing economy of operation in greater production and more accurate work. For the drilling of telltale holes the old method of one staybolt at a time in a single spindle drill has been replaced with a specially built 12-spindle horizontal machine; the feed to the spindles is actuated by cams.

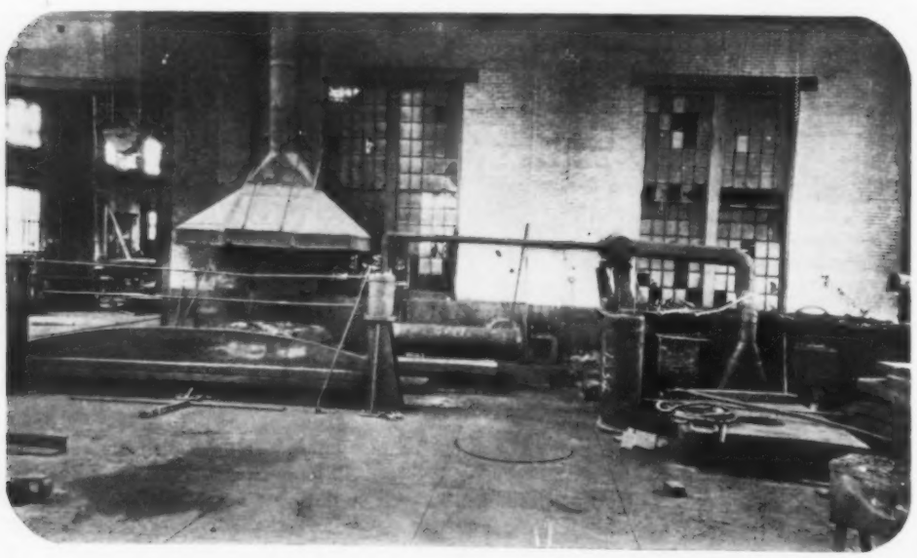
A modern heat treating department with oil bath, pyrometers, etc., has supplanted with very satisfactory results the old slipshod manner of forging and heat treating tools. Time is saved and loss in hardening practically eliminated.

Driving boxes of the driving wheels of locomotives and other parts require facing or relining with babbitt metal or bronze. A tilting furnace for the brass work was built of scrap material. For pouring babbitt metal on faces of truck and driving box hubs a jig has been developed, which eliminates necessity for machining afterward. This casting jig or table has a center section which is adjustable vertically and can be set so that the babbitt is poured to the exact thickness desired.

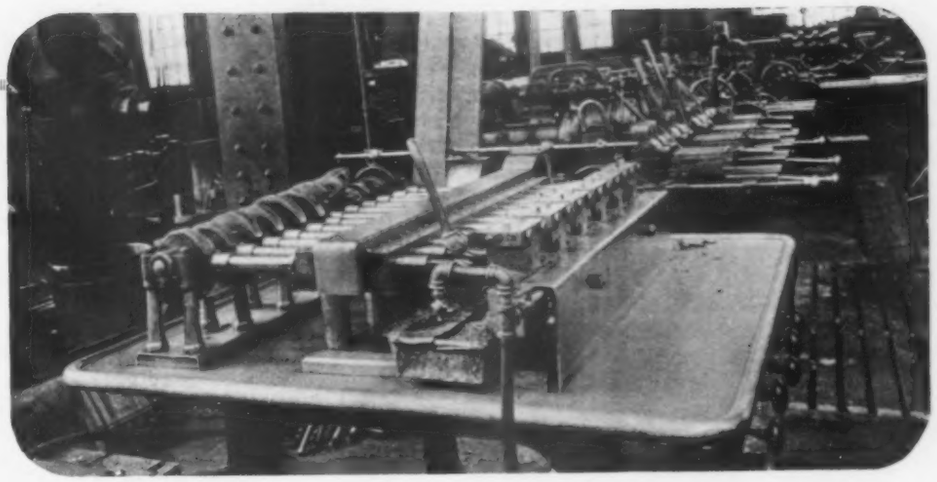
Rather than employ new forging to replace axles with worn journals, a reforging process has been developed, which enables the shop to re-turn the axle for one requiring a smaller wheelfit and journal. This method, it is found, saves $25 per axle. Those axles which are not suitable for reforging are sent to be turned and cut for knuckle pins, etc.

A considerable saving has been effected in the replacement of forged tools in various types of machine tools with tool holders and bits. For instance, a set of slotter tools which cost $750 was replaced with a set of modern tool holders using high-speed inserts, at a cost of $90 per machine set.

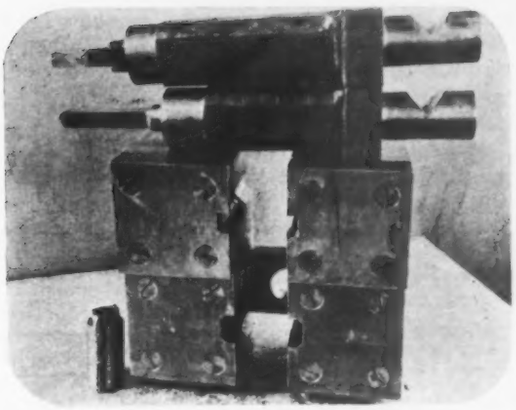
Considerably increased use is made of forging machines, which are showing economy even to the extent of their use in forging valve motion rod ends. Grease



In the Old Method of Flanging Sheets the Services of Four Men Were Required. By installing the machine shown immediately opposite on page 3, the work is done in one-third the time with one man and two helpers, besides saving considerable floor space

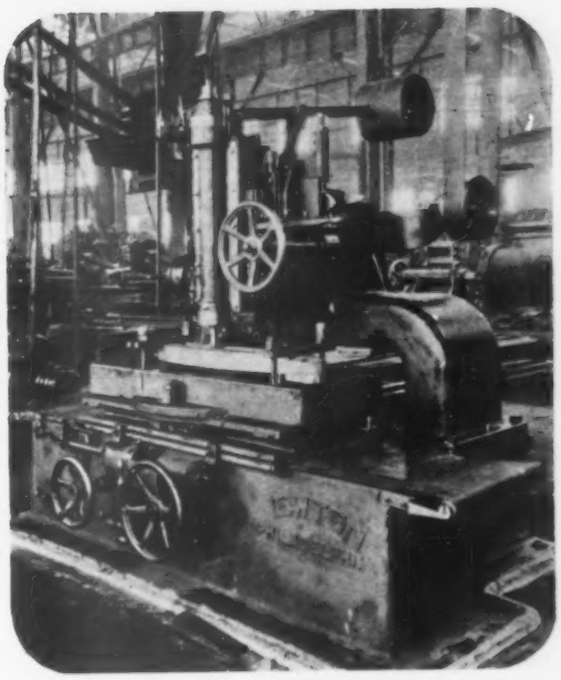


A Special Machine with 12 Spindles Actuated in the Feed by Cams Has Been Built for Drilling Tell-Tale Holes in Stay Bolts

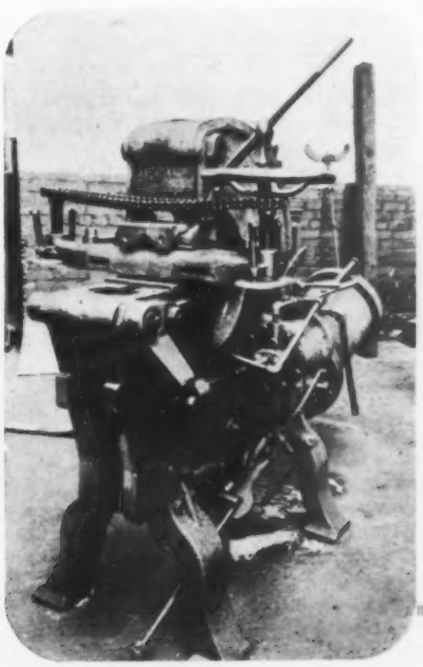


Large as Well as Small Parts Are Made in Forging Machines, Even to the Extent of Making Valve Motion Rod Ends. The illustrations show dies and plungers for forging grease cup plugs. A machined plug is shown at the left

Frame Shank Twist Drills Were Converted for Use in Standard Machines by Insertion in a Taper Shank With Collar Shrunk on to Hold in Place



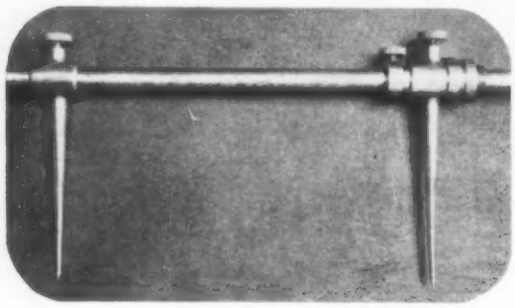
Modern Valve Link Grinder for Producing Links Correctly and More Economically than Possible With the Machine Formerly Used



Bodies of Old Punches are Saved by Using High-Speed Steel Inserts. This is one illustration of the conservation made of high-speed steel

cup plugs and many other parts are forged by machine.

Locomotive frames and other parts which crack or break in service are welded without delay to regular repairs. Acetylene welding is also used for building up worn parts. An example is a piston rod on which the crosshead fit was worn. This was built up by welding, re-turned and re-fitted to the the crosshead. Considerable saving is made on large tools by the use of acetylene welding. Planer tools and others are made with a high-speed insert welded to a machinery steel shank.



Special Design of Trammel with Micrometer Adjustment for Use in Laying Out Rods, Wedges and the Like

The railroad utilizes scrap boiler plate for the making of crucibles. Several sheets of ¼-in. plate are formed and welded together ready to be lined with fire resisting cement. These crucibles save the company $15 each.

Many other uses for acetylene welding have been found practicable. Back and front flue sheets are welded into boilers. In a number of cases old engines are equipped with superheaters. In such cases old flue sheets are cut out with the acetylene flame without removal of the old angles and rivets, the new sheet is placed back of the angle left from the old and welded into place. This practice has made considerable savings in labor and time of engines in the shop.

Accounting machines and addressing machines are used for making up payrolls. Special cards have been devised for use in this shop for combining the records of the periodograph and accounting machine on each operator's time card or on the job card.

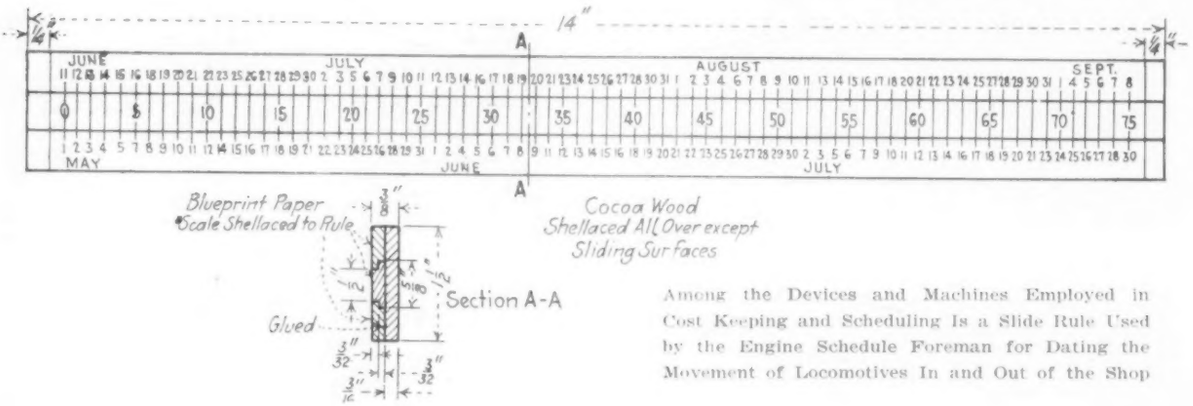
When a mechanic starts on a job, he is given a card bearing a description of the job, number of pieces and his name. He takes this card to the periodograph, which stamps the particular interval of the pay period in the space provided and punches a hole in the margin of the card. When the job is finished, the periodograph registers the period in which it was finished and punches another hole in the margin.

It might be mentioned for the information of those not familiar with the action of this machine, that each hour is divided into tenths for convenience in figuring decimals. The pay period may start Monday morning and run all week, or the clock may be set to start a new pay period each day. Non-working time, such as the lunch period, is automatically eliminated. The point worked out was the combining of the two tickets on one card, placing the periodograph marginal holes out of the field of the accounting machine, thereby eliminating the necessity of a transfer card or transcribed record. Time is saved, mistakes in transcribing are eliminated and card stock is saved.

When the job is completed the card goes to the punching machine for amounts to be punched in and it is then run through the accounting machine for figuring. On a job ticket, for example, the elapsed time is 12 periods or 1.2 hours, the man's rate is 40½c per hr., or 48c. for cost of job. This is all punched in the various columns at the right of the ticket ready for the accounting machine.

The payroll time card shows the man's name and number and his occupation. It shows his rate, the number of hours worked, the total amount of his pay and gratuity for that period. This is all punched into the card for use in the accounting machine. This card is also a combination of two machine tickets, that of the periodograph and accounting machine.

A device for further reducing clerk hire and eliminating possibility of mistakes in deducting non-working time was a slide rule for scheduling locomotives in the shop so that with minimum effort the delivery promise could be made. It has been shown conclusively in this shop that modern factory accounting methods are available for and effective in the railroad repair shop.



Among the Devices and Machines Employed in Cost Keeping and Scheduling Is a Slide Rule Used by the Engine Schedule Foreman for Dating the Movement of Locomotives In and Out of the Shop

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Alaskan mine production in 1922 was $19,506,365, an increase of $2,600,000 over that of 1921, says an announcement made today by the Geological Survey. This increase, according to Alfred H. Brooks, Chief Alaskan Geologist, is entirely due to a larger copper output. Since mining first began at Juneau in 1880, the territory produced minerals to a total value of $497,985,278, which has come chiefly from gold and copper deposits. The copper production for 1922 was nearly 39 per cent greater than that of 1921 and there was a revival of prospecting for copper.

In the course of instructions sent from Washington to the Collector of Customs at Portland, Me., last Thursday, Assistant Secretary of Treasury McKenzie Moss stated that the department is of the opinion that provision in paragraph 203 of the Fordney-McCumber tariff act covers limestone which has been crushed to varying sizes so as to be suitable for use in steel making, road building, etc. This provision carries a duty of 5c per lb. and is applicable on limestone "crude or crushed but not pulverized."

Fuel Oil for Air-Furnace Melting

Equipment at Samson Tractor Co. Plant at Waukesha Described—Costs of Oil and Coal Operation Compared

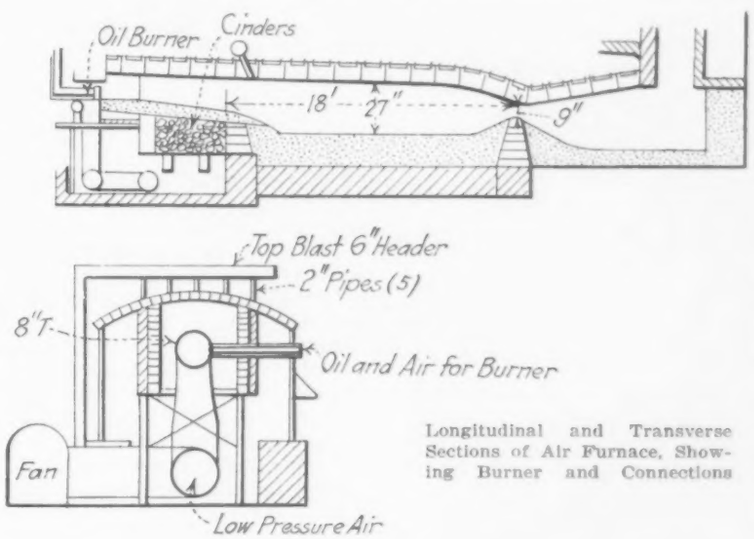
BY D. I. DOBSON*

INCREASING cost of good melting coal, high freight rates, diminishing supply, etc., are causing malleable foundries to consider other fuels than West Virginia coal as a melting medium. The extreme simplicity of converting air furnaces to fuel oil, ease of handling it and lowered melting costs have been attractive to malleable foundrymen. Unfortunately, some pioneers in this field have been unsuccessful in obtaining uniformly good heats. Oil fuel has thus received at the outset a reputation of being tricky, excessively oxidizing and uncertain.

As early as April, 1921, this company experimented with fuel oil for melting purposes. For the past six months four furnaces have been operated successfully with oil. One furnace has been in constant operation since June, 1921.

The Burner

When selecting a type of burner, it is well to consider how atomization of the oil is to be effected. Here the question of economical atomization and efficient melting should be weighed and balanced. The individual plant will find various factors which will influence the type of burner selected. In general, we may say broadly that there are three classes of burners, though under these classifications are many types, some of which are difficult to place in any one group.



Longitudinal and Transverse Sections of Air Furnace, Showing Burner and Connections

In the high-pressure burners, atomization is effected with steam or compressed air. If steam, it must be dry; it will be efficient at 25 to 65 lb. pressure, depending largely upon the temperature of the oil and its degree Baumé, or more specifically its viscosity. High pressures are to be avoided on the atomizing agent, for they necessitate high oil pressures and are not economical.

A high-pressure burner will operate equally well with compressed air as the atomizing agents, giving a reaction somewhat different from steam. With steam, a certain nozzle velocity may be obtained which will throw the flame, while with compressed air any increase of nozzle velocity is offset by more rapid combustion. The inability to throw the flame with compressed air is often puzzling to one accustomed to using steam.

With low-pressure burners atomization is partly mechanical. Such burners are operated most economically when electric power is cheap. They present the disadvantage that more than one burner must be used on a furnace, since they are restricted to smaller orifices and consequently lower capacities.

Under the third classification may be grouped all purely mechanical atomizers. This type of burner is usually so designed as to break up the oil by forcing it through small orifices while imparting a swirling motion to it. High temperatures are usually maintained on the oil, 250 deg. Fahr. being not uncommon. This is not a disadvantage, for the lower grades of oil and even tar may be burned if heated to such a degree.

Converting the Air Furnace

The only change necessary upon the air furnace is the conversion of the combustion chamber. The fire box must be filled in on top of the grates with ashes, cinders, broken fire-brick or any other available material. Two inner walls may then be constructed on top of this filler to form a v-shaped combustion chamber, 10 to 12 in. wide at the burner end, and spreading to the full width of the furnace at a point slightly in advance of the front bridge. The burner may be introduced inclined toward the iron, horizontally, or inclined up away from the iron. This company has experimented with the burner inclined rather sharply toward the iron, but has obtained the best results with but a slight inclination toward the bath, with the burner about 2½ ft. above the surface of the molten iron. The floor of the combustion chamber is, of course, filled with fire sand, and conforms in slope with the pitch of the burner.

To lengthen the combustion chamber somewhat we have built on a small box-shaped addition. It is supported by 3-in. channels with 1-in. steel stringers bolted to the furnace plates at one end, and 1½-in. pipe-uprights at the other. With this addition our combustion chambers measure a trifle over 8 ft. from burner to front bridge.

Operation

The oil flame is different from the coal flame in several respects; in the manner in which combustion occurs and the shape of the flame produced. It may be compared favorably with a gas flame. There is first of all a zone of free air surrounded by gases of hydro-carbons, next a zone of combination and then a zone of completed combustion. These zones, of course, grade into each other, but may be shortened or lengthened at will by supplying more or less air through the front blast.

Our practice here is to start with the front blast set at its maximum. This causes combustion to take place early and gives a hot fire at the front of the furnace, though the flame is quite short. The iron starts to drip in front within 35 to 45 min. on a cold furnace, and within 20 to 30 min. after recharging.

Oil is fed so that at no time is there a great amount of smoke coming from the top of the stack. After the iron starts to drip, the blast is cut to lengthen the

*Samson Tractor Co. plant, Waukesha, Wis. The paper was prepared for the convention of Wisconsin Foundrymen's Association, April 4 and 5.

flame. The hottest zone of the fire is thus worked gradually through the length of the furnace. Care must be taken not to move the blast too quickly, however, or the melting will be hung up in the part skipped over. Dampers have been installed on the top of each stack to aid in maintaining a uniform pressure in the furnace when reducing the amount of air of the front blast.

Air for combustion is here delivered by a fan, the tip diameter of which is 42 in. and width of blades 12 in. It runs at 1050 r.p.m. The air is discharged through an opening 13 in. in diameter. The top blast is taken off this 13-in. pipe by a 6-in. pipe and top blast air is delivered through five 2-in. pipes from a 6-in. header.

Some poking and skimming are necessary on the part of the operator, though his work is light when compared with that of the coal fireman. A good illustration of the comparative work is that during the hottest weather of last August one man operated a furnace, while on similar occasions heretofore three firemen have been used.

Equipment

The equipment necessary for the use of fuel oil consists of tanks for storage, pumps and feed pipes. It is best to have both a feed line and a return line. The oil in excess of that required for the burner may thus be returned to the tank. Provision should be made to circulate as much oil as is burned. In that way line pressure will be constant, and pumps may be operated on lower pressures.

Oil must be heated in cold weather. Steam coils may be inserted in the tanks for heating purposes, though care must be used to prevent leaks in the coil, for water in the oil line is disastrous to the heat. Each storage tank should have a drain valve on one end, and should be given a slight pitch toward the drain. Water accumulates from fuel oil as it stands.

A return line is also of service during cold weather, for by keeping the oil circulating slowly at night it is possible to prevent the oil in the feed pipes from becoming gummy. This company is using fuel oil from 18 to 25 deg. Baumé. Such an oil flows freely at 70 deg. Fahr., though better satisfaction is obtained when it is heated to 100 deg. Fahr. or higher.

We have found an oil pressure gage and an air pressure gage to be useful to the operator at the furnace. Indication is thus readily given in case of trouble either at the pump or compressor. Other miscellaneous equipment at each furnace includes an oil meter, strainer, pressure regulator, and a draing valve for letting out water, should it by any chance get into the line.

We have worked with the conviction that a furnace has a rated capacity in gallons of oil per hour. Such capacity is that which will give at least 15 per cent carbon dioxide over the rear bridge. Carbon dioxide may be determined by an ordinary Hays apparatus or apparatus of similar type. The amount of flame over the bridge is good indication of correct operation.

Effect Upon the Elements

Silicon.—Loss in silicon varies from 30 to 35 points on an initial heat to 20 to 25 points on a second heat.

	Average of 25 First Heats Silicon			Average of 20 Second Heats Silicon		
	In	Out	Loss	In	Out	Loss
Average.....	1.26	0.93	0.33	1.23	1.00	0.23
Minimum.....	1.27	1.07	0.20	1.21	1.04	0.17
Maximum.....	1.25	0.85	0.40	1.20	0.89	0.31

Manganese.—Loss of managanese averages 15.8 points. Some difficulty is experienced in keeping manganese low enough, since the fuel adds but little sulphur to the iron, and only small amounts of manganese sulphide are carried away by the slag. This condition is perhaps best remedied by buying pig iron high in silicon and low in manganese. The high sulphur will help lower the manganese, and at the same time aids in forming a better manganese-sulphur ratio. Our sulphurs average about 0.040 per cent.

Phosphorus.—Is unchanged.

Carbon.—From 10 to 20 points more carbon is oxidized by an oil fire than by a coal flame. The effect is to lower the amount of sprue which may be charged. However, we have maintained carbons constantly from 2.30 per cent to 2.50 per cent while charging an average of 48 per cent sprues and gates, etc., for the past eight months. This figure might be increased to 55 per cent if necessary by charging about one per cent petroleum coke on the bottom of the furnace with each cnarge.

Costs

From 5500 to 6000 gal. of oil is consumed on each of our furnaces per week of 11 heats. The capacities of the furnaces are 11 and 12 tons. The amount of oil used varies little in proportion to the charge, but may in some instances be at the minimum figure while operating the furnace at capacity. Our best record for oil consumption was the melting of 781.6 tons of iron with 43,674 gal. of oil, an average of 55.8 gal. per ton. This was made over a three weeks' period and includes the total melt of three furnaces.

Our average for four furnaces for the past four months is approximately 65 gal. per ton. This means a fuel cost of about $3.50 per ton of metal melted. A comparison with coal on this basis would be about as follows on these furnaces:

Based on 10-Ton Heat

	Oil	Coal	
Fuel cost	$35.00	$38.90	
Operation	3.00	5.40	(One operator on oil, two firemen on coal)
		1.75	(One laborer hauling coal)
		0.25	(Ash removal)
Total	$38.00	$46 30	

A saving is made also on maintenance of the furnace. We have found by comparison of 8-ton heats over a period of 203 oil heats, and 126 coal heats, the maintenance cost was $3.01 per heat in the case of oil, and $6.56 per heat while firing with coal.

An average of six bungs are relined each 11 heats. The life of side walls is about 40 per cent longer. Bungs over the combustion chamber last from two to three months, though the very first five bungs will stand up over a year. The life of the throat and the bungs over the rear end of the furnace is slightly longer, though we possess no reliable data as to length of service. Bungs near the stack have not been relined during the time we have been operating on oil.

Jubilee Exposition in Gothenburg

GOTHENBURG, SWEDEN, June 11.—The exhibits of iron and steel manufactures, which form a striking feature of the export section of the Tercentennial Jubilee Exposition in Gothenburg, have impressed the visitors by their number, completeness, and variety. The guiding principle of this fair has been to exhibit the industry as a whole, rather than individual firms. In Machinery Hall one is struck by such contrasts as, for example, a 6½-ton crank shaft for a Diesel engine wrought from a single piece of iron weighing 27 tons and a hair spring so tiny that one must use a magnifying glass to tell what it is. Ball bearings, roller bearings, an 11-in. coast defense gun, steamship propellers, steam turbines, cream separators, surgical instruments, micrometers, cutlery, etc., illustrate the variety of exhibits of Swedish manufacturers. The State Testing Institute shows machines for testing and there are special exhibits also of the Swedish Metallographic Institute and of the Iron Institute. The Gothenburg Jubilee Exposition will continue until Sept. 30.

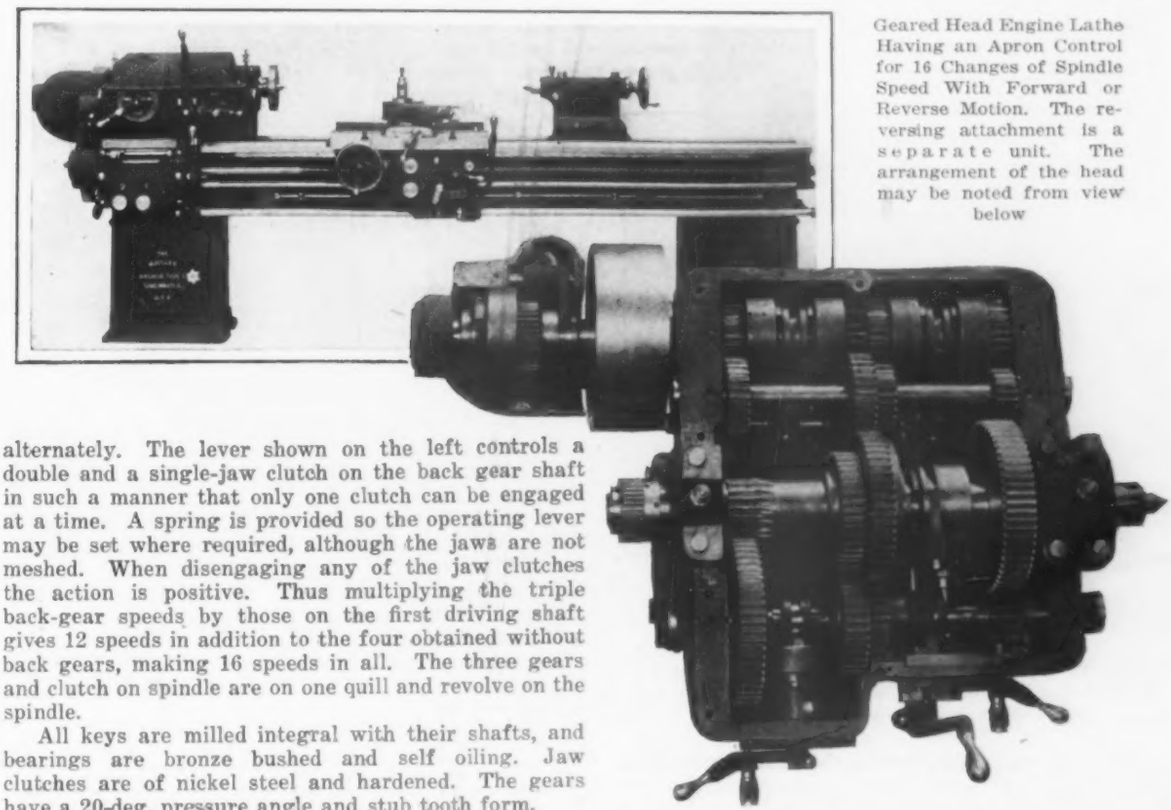
Bids submitted by Belgian producers were low on 10 locomotives for the Sorocabana Railroad and also on rails for the Sul Mineira line in Brazil, according to a report received by the Department of Commerce from Commercial Attaché W. L. Schurz, Rio de Janeiro. Bids of Swedish makers were low on 10 locomotives for the Central of Brazil Railroad, while on cars for this line bids of Belgian manufacturers were low.

New 18-In. Geared Head Engine Lathe

The 18-in. geared head engine lathe illustrated, having apron control for 16 changes of spindle speed with forward or reverse motion, has been placed on the market by the Mueller Machine Tool Co., Cincinnati. All changes are made without stopping the driving pulley.

The long lever shown in front of the head controls four changes of speed from the main driving shaft through friction clutches only one of which can be operated at one time, as the forks are on two shafts and a steel pinion meshes with a rack on either shaft by means of a gate selector, shown in the insert. The four changes are transmitted directly to the spindle with the back gear pinion withdrawn from the spindle gear and with the sliding clutch collar on the spindle engaged.

The small lever at the right of the long lever operates both the spindle clutch and the back gear pinion alternately. The lever shown on the left controls a double and a single-jaw clutch on the back gear shaft in such a manner that only one clutch can be engaged at a time. A spring is provided so the operating lever may be set where required, although the jaws are not meshed. When disengaging any of the jaw clutches the action is positive. Thus multiplying the triple back-gear speeds by those on the first driving shaft gives 12 speeds in addition to the four obtained without back gears, making 16 speeds in all. The three gears and clutch on spindle are on one quill and revolve on the spindle.



Geared Head Engine Lathe Having an Apron Control for 16 Changes of Spindle Speed With Forward or Reverse Motion. The reversing attachment is a separate unit. The arrangement of the head may be noted from view below

All keys are milled integral with their shafts, and bearings are bronze bushed and self oiling. Jaw clutches are of nickel steel and hardened. The gears have a 20-deg. pressure angle and stub tooth form.

The reversing attachment is a separate unit, which is bolted to the head and supports the first driving shaft in two radial ball bearings. The driving pulley has an internal gear on the left side of it and a friction clutch on the right, which engages the first driving shaft for right-hand drive. For left-hand drive a pinion engages with the internal gear and delivers power across to the friction gear shown, causing an opposite motion to that of the pulley. A sliding collar controls the two friction clutches operated by a fork and a lever below the attachment which is connected under the lathe head to the levers and lower splined shaft in front of the bed. Thus the lever shown at the right of the carriage has full control of starting, stopping and reversing the lathe spindle. A number of adjustable dogs on a flat bar attached to the front of the lathe bed trip the automatic feed at any desired position.

The lathes are also available equipped for motor drive, in which case the motor is bolted to the rear of the cabinet leg under the headstock.

With a capacity of 14,000 tons of ore, the Charles M. Schwab, the largest steel vessel ever built on the Great Lakes, was launched by the American Shipbuilding Co. at Cleveland, June 30. The ship is 600 ft. long and of a width permitting passage through the "Soo" locks.

Rates on Bit-Steel Billets Disapproved

WASHINGTON, July 3.—In a decision announced last Wednesday, the Interstate Commerce Commission made a finding of unreasonableness in connection with rates on bit-steel billets, in carloads, from Pittsburgh to Tulsa and Muskogee, Okla., awarded reparation and ordered the carriers to establish new rates not later than Aug. 23. The decision was based on a complaint made by the Oklahoma Iron Works. The rate applied by the railroads was fifth class, this grade of billets being classified as forgings because the billets used in making oil well drilling bits were rounded at one end by hammering and not merely by rolling. It was contended by the complainants that the rounding of one end was done to make the billets easier to handle but that it did not make them any more valuable. The commission disagreed with this point of view.

Protest against the rates was made largely on the ground that in shipping carloads of steel drill bits from Pittsburgh to Okmulgee and Sapulpa, Okla., for instance, the shippers of the bits were able to get their product at a cost of $1.30 for transportation, while the complainants paid $1.555 and $1.455 to Tulsa and Muskogee, respectively. The commission said the value of the billets was approximately 9.75c. per lb., while the bits were worth from 16.75c. to 22c. per lb. The commission found the rates unreasonable to the extent that they exceeded 87c. in the future.

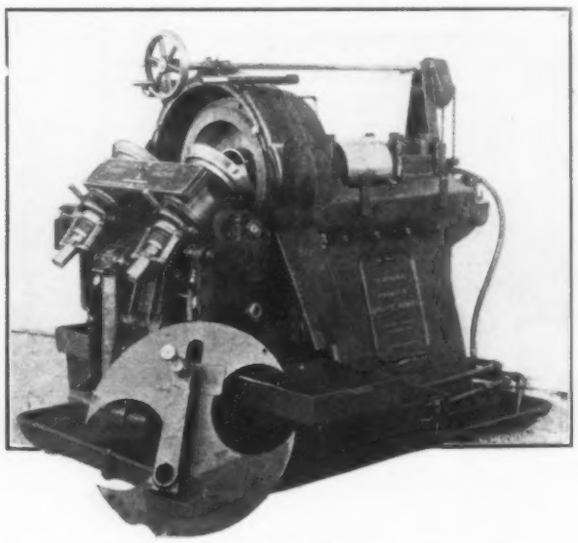
The United States Supreme Court has taken under advisement the request of the State of West Virginia for a rehearing of the natural gas cases brought against West Virginia by Ohio and Pennsylvania. In a decision of June 11, the Supreme Court held that West Virginia could not restrict the exportation of its natural gas and held to be an interference with interstate commerce the State law creating a commission to regulate the flow of gas across State lines. The mandate of the Supreme Court to carry out its decision will remain in abeyance until after the the regular fall term begins on Oct. 1.

A. W. Heinle, metal-rolling engineer, Pittsburgh, has added new data to his self-explanatory chart on alloy steel guide round and other rolled shapes.

Duplex Rotary Grinding Machine

The duplex rotary grinder illustrated, designed to surface automatically thrust washers, clutch disks and other parts that can be singly or collectively chucked within a diameter of 12 in., has been placed on the market by Williams, White & Co., Moline, Ill. The machine is a production unit and is a development of the Osterholm automatic surface grinding machine described in THE IRON AGE of July 28, 1921. Heavy construction is a feature emphasized.

The machine automatically completes a cycle after the work is chucked and the machine started. The illustration shows the grinder in the loading position, the rotary chucks being at rest. When the machine is started the first fractional rotation of the cam advances the abrasive wheel toward the work at a rate determined by the shape of the cam. The heavy cutting may be done in the first part of the cycle, allowing ample time in the remainder of the cycle for the wheel to cut itself free, true the surface ground and develop a surface of the desired quality. Upon completion of the cycle the chucks drop automatically to a loading position and the machine stops. The automatic features



Duplex Rotary Grinder for Surfacing Thrust Washers, Clutch Disks and Similar Parts. The machine as shown is in the loading position

are said to permit operation of the machine by comparatively unskilled labor, one operator attending two or more machines in cases where the combined chucking and unloading time is considerably less than the operating time.

Provision has been made for adequately cooling the work, the liquid being pumped through the wheel spindle and an additional stream through each of the work spindles. The water brought through the wheel spindle cascades over the rim of the wheel at a rate sufficient to prevent the wheel from loading, the water brought through the wheel spindles at the rear of the work having a tendency to keep the temperature of the work down, preventing burns and warping. When the machine is operating the wheel chamber is practically sealed.

Either mechanical rotary chucks, pneumatically or hand operated, or magnetic chucks may be used. Mechanical chucks are recommended because with them such parts as thrust washers can be ground with accurately parallel sides in two operations. Expanding or contracting collets are operated through toggle links by means of the handles shown.

Cylinder wheels 20 in. in diameter and 8 to 4 in. deep, according to the height of work to be ground, are employed. The depth and rim thickness are varied to suit the parts to be ground. The wheel is advanced to compensate for loss in grinding and dressing by means of a handwheel graduated in thousandths, located on top of the water guard. The wheel dresser is mechanically driven and is always in place.

The duration of the cycle of the machine to accommodate area to be surfaced is varied by means of change gears at the left-hand side of the grinder. A three-step change gear arrangement is also provided for varying the speed of the spindles. Lubrication of the machine is by means of ring and chain oilers supplied from suitable oil wells.

Work 12 in. in diameter by 4 to 8 in. high may be ground. The spindle speed is 900 to 1000 r.p.m., and three geared chuck speeds, from 8 to 12 r.p.m., are available.

Iron and Steel Census of 1921

Census figures for the entire industry manufacturing iron and steel and their products show a total of 16,571 establishments with 1,030,248 wage earners in 1921, and a total production valued at $5,592,204,380. About one-quarter of the wage earners, one-third of the products and one-twenty-fifth of the number of establishments represent the iron and steel industry proper, while the remainder comprise a great variety of metal working industries in which iron and steel are the principal basic materials.

Chief among these latter will be found foundries and machine shop products, structural steel work coming next and engines operated by steam, gas and water following. The chief industries represented are tabulated below in order of the value of products.

Iron and Steel and Their Products—1921

Industry	Number of Establishments	Wage-earners	Value of Products	Production per "Man"
Total	16,571	1,030,248	$5,592,204,380	$5,428
Crude iron and steel rolled products	628	254,213	1,901,430,596	7,480
Iron and steel, blast furnaces	134	18,698	419,771,244	22,450
Iron and steel, steel works and rolling mills	494	235,515	1,481,659,352	6,290
Other iron and steel products	15,943	776,035	3,690,773,784	4,755
Foundry and machine shop products	9,013	321,363	1,565,526,944	4,872
Structural iron and steel work*	1,021	32,897	250,085,446	7,602
Engines, steam, gas and water	296	35,567	199,498,575	5,609
Tools and cutlery	1,042	41,181	145,697,169	3,537
Textile machinery and parts	421	31,025	128,934,896	4,156
Steam and hot-water heating	274	30,808	127,366,887	4,134
Hardware	430	33,802	116,688,661	3,452
Locomotives†	22	16,583	102,023,358	6,152
Stoves and hot-air furnaces	357	24,531	101,572,793	4,140
Stoves, gas and oil	155	7,921	42,712,676	5,392
Wire‡	61	14,832	99,945,814	6,739
Other wire work	413	11,485	66,384,507	5,780
Forgings	240	16,740	83,151,126	4,967
Pumps, all	221	12,186	69,962,413	5,741
Plumbers' supplies	220	16,670	69,118,794	4,146
Machine tools	348	21,307	67,729,362	3,179
Wrought pipe*	57	8,728	56,662,278	6,492
Cash registers and calculating machines	49	9,786	53,652,943	5,482
Cast iron pipe*	70	12,496	44,321,548	3,547
Typewriters and supplies	75	13,381	41,789,990	3,123
Bolts, nuts, washers and rivets*	125	10,148	35,773,454	3,525
Sewing machines and attachments	36	12,569	35,608,297	2,833
Steel springs, car and carriage*	126	5,358	31,750,373	5,926

*Aside from production of steel works or rolling mills.
†Not made by railroad companies.
‡Not including wire departments of rolling mills.

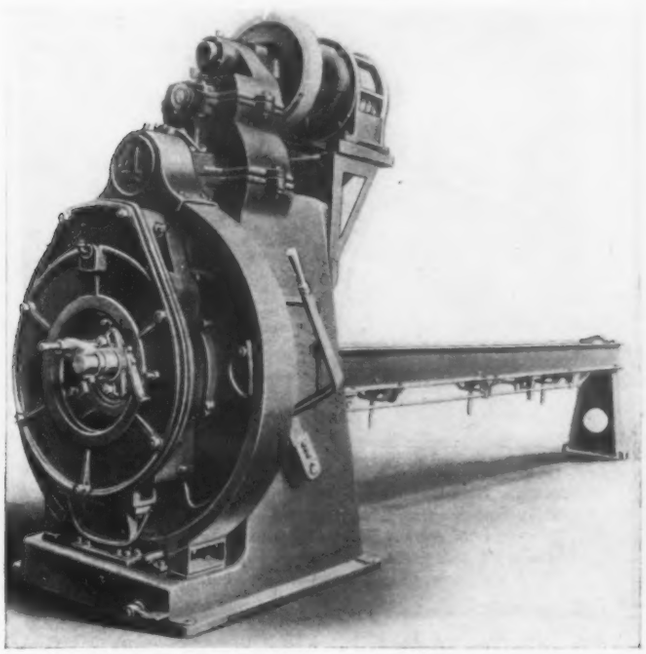
The Copper and Brass Research Association has just added to its membership the Engels Copper Mining Co., Granby Consolidated Mining, Smelting & Power Co., Dallas Brass & Copper Co., Merchant & Evans Co., T. E. Conklin Brass & Copper Co., J. M. & L. A. Osborn Co., and Richards & Co., Ltd. The present membership of the association comprises 26 copper mining companies and 15 copper and brass fabricating and distributing companies.

The Pacific Coast has recently purchased straighteners for steel angles. One for 6 x 6 x ¾-in. angles goes to the Pacific Steel Co. and another for 4 x 4 x ½-in. angles to the Judson Mfg. Co., San Francisco. Both were built by Kane & Roach, Syracuse, N. Y.

Machine for Shearing Steel, Brass and Aluminum Pipe and Tubing

A machine for shearing pipe and tubing of steel, brass, copper and aluminum, said to be applied with particular perfection on the thinner wall sizes, has been placed on the market by the Tube Shear Co., Marquette Building, Chicago. Shearing up to the last inch is a feature claimed. The machine is intended also to provide economical equipment for the trimming of the tubular sections produced in the field of deep-drawing and stamping.

The principle of operation is one of shearing over an arbor with a non-rotating ring blade. This principle obviates the necessity of chucking or holding the tubing, as neither the blade nor the tubing rotate. The action of the blade is one of concentrically shearing about the circumference of the tube and holds the tube and knife in a fixed relative position. A further advantage in this method is claimed in the design of the machine, as the load sustaining shear blocks are bearing directly in the plane of shear.



Heavy-Duty Tube Shear. The principle of operation is one of shearing over an arbor with a non-rotating ring blade; chucking or holding the work is unnecessary. A view of the machine with cover plate removed is at the right. Accessibility of the shearing knives is a feature, and the advantage of shearing up to the last inch leaving no waste ends is also emphasized

The illustrations are of the heavy duty type machine, the lighter type machine having similar features except that the shearing head runs continuously and at a higher speed. The machine is a back-geared, single revolution shear, operated by a treadle through positive clutch mechanism, in a similar way to any standard plate or bar shear. It has a fixed stroke and two main adjustments, one for the knife and the other for the knife alinement. The stroke is governed by the maximum wall thickness of tubing for which the machine is designed. It need be no greater than the wall, as it is not necessary for the knife to pass completely through the wall of the tubing.

The shearing angle is established through the difference in diameter between the ring blade and the outside diameter of the tube, and is controlled by the main knife adjustment, not by the stroke. The main knife adjusting mechanism is located on the shear-head in line with the stroke-actuating member, and governs the eccentricity of operation of the ring shear-block.

The adjustment for the knife alinement is carried through to the tail end of the arbor, and is accessible from the front of the machine, while the arbor itself is detachable without affecting this alinement feature. The comparative flexibility of the arbor, due to its length, is compensated for by supports, which position automatically as tube is being fed out. The rolls on which the tube travels are adjustable for various diameters. Stop and feed mechanisms are also adjustable for shearing various lengths and for feeding different diameters.

A feature claimed for the tube shear is the accessibility of the shearing knives, which are plain hardened rings, free from bolt holes or irregular surfaces, and are simple members to machine, harden, regrind, or replace. Suitable provision is made for adjustment for wear.

The principle is considered practical on tubing with wall thickness not in excess of 10 per cent of the diameter. Shearing up to the last inch, leaving no waste end, is a feature of the machine, possible because the chucking is eliminated.

Pennsylvania Silica Brick Prices Reduced

PITTSBURGH, July 2.—Effective today, leading Pennsylvania makers of silica brick reduced prices $2 per 1000 to a basis of $45. So far there has been no change in Chicago or Birmingham brands. The reduction comes as a result of the fact that demands for several weeks past have been progressively smaller and also to bring the regular price more in line with those of some makers, who lacking much of a backlog of orders, have been going as much as $5 per 1000 below the regular price to get enough business to keep their plants going. Sales have been made at $42 and this price or even less can be done since demand is light in keeping with narrowing activities of the principal consuming industries.

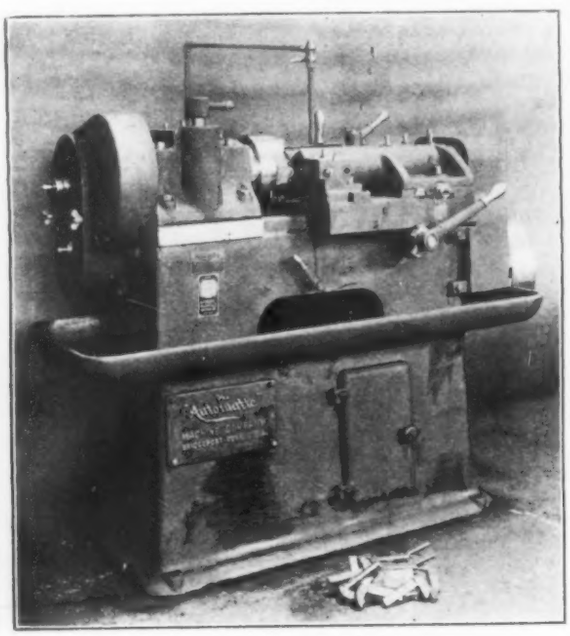
As yet, there has been no change in clay fire brick or the other kinds of refractories, but business is slow and dwindling order books usually mean more pressure for business and declining prices. The great bulk of the present bookings in fire clay brick are priced well under those now quoted, and evidently users are well supplied, since there have been several cancellations, some of them being rather big. Quotations are given on page 49.

Statistics gathered by the National Metal Trades Association show a slight decrease in employment in Detroit and Milwaukee. The aggregate working force of firms reporting on June 14, at Detroit, was 228,658, a net decrease of 1313 in two weeks. The total number of employees at 50 metal-working shops in Milwaukee during the month of May was 19,631, a decrease of 330 as compared with April.

Machine for Threading Pipe Wrench Jaws

Maximum production in milling threads upon the jaws of pipe wrenches is claimed for the Coulter duplex hob thread milling machine illustrated, which has been recently placed on the market by the Automatic Machine Co., Bridgeport, Conn. A production of 85 14-in. wrench jaws, completely threaded, in an hour is claimed from the first machine built, greater production being expected when the operator becomes more familiar with the machine and when the permissible speed of the cutters and feeds have been determined.

The threading of wrench jaws has been done in many different ways and is considered difficult to perform and severe on the machines employed because



Duplex-Hob Thread Milling Machine for Pipe Wrench Jaws. Use of two hob milling cutters is a feature. They are mounted parallel to each other and directly opposite, as shown above, so that only one-half a revolution of the work is required to complete the threading of a rough-trimmed forging

of the interrupted surface to be threaded, the section being rectangular in form with edges curved to a diameter equal to its width.

In addition to the rigidity, weight, proper bearing surfaces, large milling spindles, milling arbor supports, quick chucking and automatic stop features, the use of two hob milling cutters is a feature emphasized. These are mounted parallel to each other, directly opposite, so that in operation the work makes only one-half revolution to complete the threading direct from the rough trimmed jaw forging.

Power from the single pulley drive is transmitted to the work spindle and milling spindle through spiral gears. Variations in feed are made by means of change gearing. The lead or pitch of the thread is governed by a lead cam having a wide face. A bronze shoe fastened adjustably to the milling spindle carriage is held against the cam by a weight. The parallel milling spindles may be adjusted independently or as a unit so that it is possible to set each cutter exactly the same distance from the center of the work, thus controlling the size of the work. A lever operated tail center is located between the steel milling spindle housing and operated by the hand lever on the right front of the machine, clamping with the handle on top.

The small handle in the front, directly under the chuck, is for starting the machine. The handle on top of the work spindle is for operating the chuck through a plunger in the center of the spindle, engaging two tool-steel levers fulcrumed in the steel chuck body and acting on the master jaws into which are fitted adjustable work holding jaws. Between the jaws and at right angles, a form jig is fitted to support and aline the head-end of the work without centering.

The base is equipped with an oil pan, as shown, under which space is provided for oil storage and for a cabinet. Oil pump and piping are provided.

Tennessee Company Will Build Railroad to Connect Plants

BIRMINGHAM, ALA., July 2.—It is agreed in industrial circles that the construction by the Tennessee company of a five mile standard gage gravity railroad from the Red Mountain ore mines direct to blast furnaces at Bessemer and Ensley will result in a great economy in assemblage of raw material. The official announcement of Vice-President H. C. Ryding follows:

The Tennessee Coal, Iron & Railroad Co. will construct a single line standard gage rail from the Wenonah division of the ore mines on Red Mountain in a straight line across Jones and 'Possum Valleys to connect with the existing tracks in the vicinity of the Fairfield Steel works and the Fairfield Coke works. The length of this track will be approximately five miles. Red ore will be transported over this line from all of the Tennessee county mines on Red Mountain to the furnaces at Ensley and Bessemer.

The plan of this railroad track has been determined upon with particular reference to safety, speed and economy in operation. It will be elevated along the entire route across Jones and 'Possum Valleys, public roads, street railways and railroad tracks being spanned with suitable bridges, thus completely eliminating danger of grade crossings. The trains, therefore, will run through direct from Red Mountain to Fairfield without a single stop, with resulting economy in operation.

Construction will be undertaken at once and will be carried on at an economical rate until date of completion.

The road will traverse thickly settled communities and will cost several millions of dollars. It is a five-year old plan.

Report of Great Northern Iron Ore Properties

The trustees of the Great Northern Iron Ore Properties have published their sixteenth annual report, which covers the calendar year 1922. The shipments and receipts of ore under "old leases" were 1,759,794 tons in 1922, the average royalty being 18.8064c. Of the above total, 1,024,794 tons came from the Mahoning mine and the remainder from the Stevenson, Leetonia, Utica and Sweeney mines. Shipments and receipts under leases made in 1913 and subsequent years amounted in 1922 to 3,796,410 tons. The total receipts of the year were $4,465,035.29 and the disbursements to certificate holders were $4,500,000, or $3 per share. Salaries and other expenses were $84,685.19. The total distribution to certificate holders in the years 1907 to 1922 inclusive was $43,125,000.

The plant of the Wood Turret Machine Co., Brazil, Ind., was recently offered for sale by the Brazil Trust Co., receiver, but failed to sell, and will be readvertised in the near future.

American Society for Testing Materials

Annual Convention Discusses Magnetic Testing and Fatigue of Metals—Chemical Requirements for Cast Iron —Changes in Specifications

NEW information on the magnetic testing of steel, further developments in the endurance properties and fatigue resistance of steels and non-ferrous alloys, and a topical discussion on the necessity for chemical specifications for cast iron were some of the leading features of the twenty-sixth annual convention of the American Society for Testing Materials, held last week at Haddon Hall, Atlantic City, June 25 to 29. The usual reports of standing committees involving some new specifications, particularly those for steel castings, as well as changes in standing specifications were as usual part of the regular procedure.

The largest attendance in the history of the society had been registered at the end of the first two days, with 458 men and 138 women present. For attendance at all the society's activities, a registration of 1000 was estimated. Not only the increased membership of the society, but the popularity of the place of meeting largely explain the attendance and enthusiasm of these gatherings. An interesting program was carried out, the leading features being recounted here.

Magnetic Analysis and Fatigue of Metals

Probably the most interesting session as regards new information divulged was the one on corrosion, fatigue of metals and magnetic analysis, on Tuesday morning, June 26, at which D. M. Buck, chief chemist American Sheet & Tin Plate Co., Pittsburgh, presided. Besides the regular committee reports, always presented at this session, two important subjects engaged major attention. One was that of magnetic analysis, and the other the endurance properties of steels and non-ferrous alloys.

New Magnetic Inspection Method

Keen interest in the former subject was awakened by the presentation by A. V. de Forest, research engineer American Chain Co., Bridgeport, Conn., of a paper entitled "A New Method of Magnetic Inspection." The author delivered a very brief description of his new method, characterizing it as a rapid one for determining the different effects of two different factors entering into the treatment of steel, brought about by a suitable combination of two independent magnetic readings. The new apparatus is a distinct advance in the realm of non-destructive test and inspection. The apparatus is portable and employs commercial alternating current which can be used for commercial inspection of suitable objects.

He exhibited the apparatus and gave numerous examples of the method by which it works. So far as the subject has been studied, the new method has been applied to a study of the different magnetic effects of the quenching and drawing process on 1 per cent tool steel and 18 per cent tungsten high-speed steel. It is claimed possible by means of the apparatus to determine the steps through which a tool has already gone to arrive at a certain condition, and to differentiate between the quenching and drawing history of the piece. It is limited to small differences, but one variable, such as quenching or drawing, can be entirely cut out, while determining the other. In other words, a separation can be made between the effects of different variables which enter into the quality of the finished product and, under favorable circumstances, a single measurement can be adjusted to read the desired combination of several factors influencing a complex property such as strength, hardness or brittleness.

Dr. C. W. Burrows, New York, congratulated Mr. de Forest and his collaborators for their contribution to the subject of magnetic analysis. In his opinion, the author had emphasized one vital point: That magnetic analysis to be useful must recognize more than one variable because various metals have many magnetic characteristics. Doctor Burrows was emphatic in the opinion that magnetic analysis is comparable in its magnitude with chemistry and that when we appreciate the various magnetic characteristics, we may then expect to reach the best that is attainable. "Magnetic analysis applied to steel undoubtedly has a future similar to that of the microscope."

F. P. Fahy, consulting engineer, New York, stated that he had followed from its inception the work of Mr. de Forest. The value of magnetic analysis, he described, lies in its ability not only to interpret the final condition of a piece of steel but the steps taken to reach that condition. At present operators in this field are limited to the number of factors which they can identify, but more is expected to be possible later. Mr. Fahy stated that the idea is too general that magnetic analysis is a special subject, and that therefore it is difficult to stimulate interest in it. He believed that there are many organizations which have men capable to go on with such work and he requested the members to examine the apparatus as far as possible and to apply it in their own organizations so as to stimulate interest in this important subject. "If magnetic analysis lags, it is because not enough investigators are working upon it."

In response to a question as to whether the non-uniformity of structure of certain steels, particularly of larger section, presented any difficulty, Mr. de Forest said that it was possible, by using various frequencies of current, to analyze the various layers of a cross section and thus lump the entire field.

Magnetic Properties and Analysis

Following this paper the report of committee A-6 on magnetic properties was presented by Doctor Burrows, its chairman. Because of the development of a number of new methods for magnetic testing in recent years, the committee reported it to be desirable to revise the standard methods so as to permit the use of any method which yields results of satisfactory accuracy. The committee submitted for publication as tentative new specifications (A 34—23 T) as a revision of the standard methods of tests for magnetic properties of iron and steel, adopted in 1918, so as to permit the use of any method which yields results which are within the specified limits of accuracy.

There was also presented at this time the report of committee A-8 on magnetic analysis, which stated that the chief activities since the last annual report have centered upon the work of its sub-committee on the testing of twist drills, organized in 1920 with the aim of correlating the magnetic and cutting properties of a definite tool of high-speed steel of typical analysis.

An abstract of the report of the committee was read as printed and the statement made that the committee as a whole considers the work thus far carried out as only a survey to determine what appears to be the best method of approach to the solution of a problem of very considerable importance. So far as the committee has gone, no single magnetic characteristic may be taken as indicative of the quality of the drill as a whole. It was felt possible, however, that a magnetic test

procedure may be evolved which will take into account more than one physical property of the material and give at least a partial solution to the problem. The report was presented by the chairman, F. P. Fahy.

Endurance Properties of Steels

In an exhaustive paper of 46 pages, copiously illustrated with tables and diagrams, the subject, "Endurance Properties of Steel: Their Relation to Other Physical Properties and to Chemical Composition," was discussed by D. J. McAdams, Jr., metallurgist United States Naval Engineering Experiment Station, Annapolis, Md.

The scope of this paper is exceedingly large and further describes an investigation, part of which was published in 1921. In the continuation of this work a great variety of carbon and alloy steels of various compositions, heat-treated in various ways, have been used. Static tension and torsion and impact tests were made on each kind of material. The tests of specimens of the rotating cantilever type, as previously described, have been continued. Alternating torsion tests and impact endurance tests have also been made. The entire work represents several years' investigation. As a result of repeated impact tests, the relationship of repeated impact to single impact and to endurance properties is indicated by graphs which are discussed.

Referring to the results of the tests, the author gives consideration to the following subjects: Relationship of endurance properties to static tension and torsion properties; relationship of endurance properties to impact properties; influence of chemical composition and heat-treatment; influence of non-metallic inclusions; influence of form and surface finish of a machinery part and types of steel best adapted for various kinds of service.

The fact was noted that Doctor Adams' results check those made at the University of Illinois by Prof. H. F. Moore, long identified with such work. He stated that the paper brings out other results which were not known. He characterized the endurance range investigation as valuable and called attention to the fact that, in the relationship between tensile strength and endurance limit, unusually delicate values have been obtained. As to the reversed torsion tests, these checked his own work. In the realm of non-ferrous metals, Professor Moore said that the investigator must adopt an entirely different attitude and that, for instance, in monel metal the endurance ratios are different. In a test on this metal he stated that the endurance limit was not reached until Feb. 12, 1921, in a test which was started Nov. 18, 1919, and in which the repeated reversals of stress exceeded 1,000,000,000.

Fatigue of Duralumin, Elektron and Other Alloys

Another interesting paper in this same line of investigation was presented in abstract by its author, R. R. Moore, chief physical testing branch, engineering division, U. S. Air Service, McCook Field, Dayton, Ohio, whose subject was "Resistance of Manganese Bronze, Duralumin and Elektron Metal to Alternating Stresses." The paper gives the results of investigations made at McCook field. The principal part of the work concerns duralumin bar stock as rolled, annealed and tempered, and similar investigations on manganese bronze and elektron metal are included. The tests were on rotating beam machines of the same type as those used at the University of Illinois, and with the same type of specimen. In addition to having established an endurance limit for duralumin the following other important points are covered:

1. Evidence that the endurance limit of non-ferrous metals cannot be determined by applying 10,000,000 repetitions of stress as is the case with most steels. This is borne out by tests in which failures have been obtained at 30, 50, 80 and even 100 million repetitions of stress.
2. Results of long time tests, that is, 200 to 400 million repetitions of stress.
3. Polishing of specimens at the critical section.
4. Difficulties encountered in adapting this type of machine and specimen (which were primarily designed for steel) to light aluminum alloys.

The endurance limits of the metals tested by the author are as follows:

	Lb. per Sq. In.
Manganese bronze	15,000
Elektron metal	17,000
Duralumin "as received"	14,000
Duralumin "as received" tempered at 925 deg. Fahr.	12,000
Duralumin "as received" annealed at 700 deg. Fahr.	10,860

"The endurance limits of the non-ferrous metals tested, insofar as they were investigated here, do not bear any definite relation to other physical properties."

In discussing Mr. Moore's paper, R. L. Templin, Aluminum Co. of America, New Kensington, Pa., stated that the chemical analysis of the materials, given by the author, were not the same as called for by Government specifications, and that the static results obtained could not result from material of the analysis indicated. As to fatigue limits, Mr. Templin said it was difficult to determine these in the case of non-ferrous metals, and that they had in their laboratory three specimens which had been under test for a long time. On June 18 one had undergone 545,500,000 repetitions of stress at 4000 lb. per sq. in., another was still going at 702,168,000 repetitions of stress at 6000 lb. per sq. in., and another at 555,244,000 repetitions of stress at 8000 lb. per sq. in. As to elektron metal, Mr. Templin said that its elastic limit is appreciably, and sometimes considerably, above the proportional limit, and that this fact may have some bearing on its fatigue properties.

Two committee reports were presented at this session, one that of committee A-5 on corrosion of iron and steel, and the other, that of committee B-3, on corrosion of non-ferrous metals and alloys. The latter presented by its chairman, E. C. Lathrop, was largely a progress report.

The report of committee A-5 consisted mostly of reports of various sub-committees on the inspection of exposed samples of various kinds of sheet steel at Fort Sheridan, Ill., Pittsburgh and Annapolis. Work at the Pittsburgh location was reported as completed on March 3, 1923, and attention was called to the beneficial effect of copper in all the various types of metal exposed. That a few of the light gage samples have failed at some of the locations as against no failures for the heavy gage was called to attention. It is also noted that the copper added to the steels does not appear to be a factor in rust resistance when the metals are totally and continuously submerged in running water.

Session on Cast Iron, Coke and Heat Treatment

The session Tuesday afternoon devoted to wrought and cast iron, coal and coke, and heat treatment, with Past-President G. H. Clamer in the chair, was enlivened by a topical discussion on the subject, "Is It Desirable to Include Chemical Requirements in Specifications for Cast Iron?" A fairly spirited discussion followed the presentation of the affirmative and negative side of this question, the affirmative by Robert Job, vice-president Milton Hersey Co., Ltd., Montreal, Canada, and the negative by Dr. Richard Moldenke.

Chemical Specifications for Iron Castings

Mr. Job contended that, in general, chemical specifications are necessary in conjunction with physical requirements, because our present knowledge as to physical tests is often insufficient to definitely determine their meaning in terms of actual serviceability of the castings under practical working conditions. He contended that supplementary chemical tests have by practical experience been proved necessary to secure efficient service from the castings, owing to the lack of knowledge referred to. He cited, in particular, cast iron car wheels, the service value of which cannot be correctly regulated by physical tests. Wheels may pass all the usual physical tests and still be far from satisfactory as to quality. For example, it has been observed that when the percentage of combined carbon exceeds a certain proportion, undue brittleness is present and the wheel is liable to fail.

Steam cylinders for locomotives were cited as an-

other illustration of the necessity for chemical specifications. Mr. Job contended that this iron is totally different from chilled wheel metal. In the valuation of this iron, physical tests are extremely useful, but few consumers, said Mr. Job, would have the hardihood to pin their faith merely to physical tests and, as a result of practical experience, chemical composition is being held within certain limits. Iron castings used for evaporation pans and also metal for grate bars were cited by Mr. Job as being cases where chemical specifications are necessary to supplement the physical.

A Plea for the Negative

In presenting the negative side of this discussion, Doctor Moldenke contended that the tendency of specifying the chemical analysis for iron castings, in addition to prescribing physical tests, is strongly deprecated, except for fixing maxima for specifically injurious elements. He contended that where chemical analysis in specifications has been tried, the limits of the individual elements have had to be made so wide in order not to exclude suitable castings, no useful purpose could be served.

Doctor Moldenke referred to the society of automotive engineers, which went into this subject thoroughly and found that to include all the compositions of castings coming under each separate line of work, for which special specifications were to be prepared, would mean that the limits for the several elements in cast iron would have to be made so wide that nothing of use would be attained, and the project was abandoned. Another reason was pointed to as consisting in the fact that the history of the development in foundry practice has shown that present-day compositions of castings are considerably different from those which were considered necessary some years back, and silicon was cited as a good example of this. There is no reason, however, said Doctor Moldenke, why a certain line of compositions which a foundryman finds gives him good results should not be given in the specifications issued under the head of "recommended practice," but not as an essential requirement. Where maxima for certain elements may be specified, it is known definitely that when a given maximum percentage of an element is exceeded, failure may result, and that it is wise to apply this limit. The case of sulphur in cast iron water pipe was given as an example.

The speaker's conclusion was that it is unwise to add to the troubles of the foundryman by imposing upon him chemical requirements in addition to physical ones. Either one or the other should be imposed, but not both. If the consumer wants a given composition, the foundryman can furnish it, but then the consumer is responsible for the physical characteristics but, if the consumer wants the castings for his service requirements, the foundryman should be unhindered in working out the problem so long as the service requirement tests are met.

That physical requirements do not always give the consumer what he wants and that test bars cast separate do not represent the metal in the castings, was the contention of H. E. Diller, of *Foundry*, Cleveland. W. P. Putnam, president Detroit Testing Laboratories, Detroit, in a written discussion stated that chemical composition is desirable for some castings, but for others it is unjust to the foundrymen, who should be permitted to produce castings to meet physical requirements.

In a written discussion George K. Elliott, chief metallurgist Lunkenheimer Co., Cincinnati, showed that there was a great deal of virtue in what both Doctor Moldenke and Mr. Job had contributed, and he made a plea not to saddle the foundrymen with additional burdens. Broadly speaking, he thought they should be untrammeled, although there are exceptions. He pointed to the fact that new conditions are constantly arising, brought about by such agencies as the electric furnace and the air furnace, and a plea was made for dynamic tests. In a broad sense he advocated that limits for carbon and silicon be not imposed, but that mechanical and physical specifications be required.

A forceful argument for chemical specifications for chilled iron wheels was delivered by H. J. Force, Delaware, Lackawanna & Western Railroad Co., Scranton, Pa., taking as a text the fact that experience has shown that an average of 900 cast iron wheels have broken each year, entailing through accidents a loss to railroads and traveling public of over $100,000,000. He held that the use of chemical specifications would eliminate a large percentage of this unfortunate showing. He stated that the American Railway Association had asked recently for comprehensive chemical specifications for cast iron wheels and that the Chilled Iron Wheel Association had also recommended such specifications. In the case of 45,000 wheels which had been made to chemical specifications in his own experience, failures had been practically nothing. In wheels which had failed it had been found that the combined carbon ran as high as 1.25 to 1.45 per cent in face of the fact that it is generally recognized that this should not exceed 0.75 per cent. He advocated the latter as a chemical specification for combined carbon, together with low manganese and not too high a phosphorus content, including also a high total carbon.

Dr. Moldenke agreed that certain chemical specifications were all right for wheels, but not for general castings.

Coal and Coke

The report of the new committee, known as committee D-5 on coal and coke, a combination of the two committees formerly dealing with coal and coke, and reporting separately, presented at this session, stated that experimental work has been conducted on a method for determining the fineness of pulverized coal and that a method for the determining of the percentage by volume of cell-space of lump coke has been standardized. Combustibility tests have been conducted on different cokes in an experimental furnace and an analysis of about 100 boiler tests on semi-bituminous coals in regard to clinker trouble as related to laboratory tests of ash fusibility have been made. Specifications for gas and coking coals have been prepared and progress has been made in the standardization of anthracite sizes.

"The Properties of Metallurgical Coke" was the title of a paper by G. St. J. Perrott and A. C. Fieldner, associate physical chemist, Southern Experiment Station, U. S. Bureau of Mines, Tuscaloosa, Ala., and supervising fuels chemist, U. S. Bureau of Mines, Pittsburgh, respectively. The paper reviews briefly a study of the physical properties of coke in relation to its production and utilization, being conducted by the Southern Experiment Station, and discusses the history of coke testing, describing the work of the bureau in connection with the shatter test, the tumbler barrel test, combustibility and the rate of oxidation of cokes by carbon dioxide. An interesting phase of the paper is the report of an investigation of the hearth combustion zone at 11 blast furnaces operating on cokes, varying widely in physical characteristics. There is also discussed the relation between results of testing methods and the performance of coke in the blast furnaces.*

Tool Temperatures and Cutting Resistance

"The Significance of Tool Temperatures as a Function of the Cutting Resistance of Metals" was discussed by H. A. Schwartz, manager of research, National Malleable Castings Co., and W. W. Flagle, engineer of tests, research department of the same company. An instrument for recording the changes of temperature of the drill or other cutting tool in action is described. In this paper, it is stated by the authors that the life of a given tool is a function of its working temperature, and hence that the temperatures reached under given cutting conditions in varying materials are an indication of their machinability or cutting hardness. The paper contains data covering typical commercial ferrous-alloys and some relations are shown between the energy per cubic inch of metal removed,

*Much of the information in this paper was covered in THE IRON AGE, June 28, page 1839.

temperature and rate of removal, which suggest the utility of the pyrometer in place of a tool dynamometer. The authors suggest the further study of the behavior of tool steels at various temperatures.

The progress reports of committee A-2 on wrought iron, of committee A-3 on gas iron, and of committee A-4 on the heat treatment of iron and steel were presented by their respective chairmen.

Session on Steel and Research

The question as to the extent to which the American Society for Testing Materials should enter into the subject of research in engineering materials was one of the principal topics discussed at the steel meeting on Wednesday morning, June 27. Vice-President Guilliaem Aertsen presided. The subject was brought before the society by a statement, on behalf of the executive committee, by the president of the society, Dr. George K. Burgess.

Pointing to the fact that most of the society's work up to this time has been the formulation of specifications and methods of testing, Doctor Burgess said that the executive committee had been seriously considering the research possibilities of the organization. Referring to the re-organization of committee E-1 on methods of testing, a plan has been under consideration of a similar committee on research. Such a committee might act as a steering committee on research, looking over activities in that field. The speaker asked for an expression of sentiment from various members as to the policy to be followed.

The discussion was opened by Past President Arthur M. Talbot, chairman of the committee on research of the American Society of Civil Engineers. Voicing his approval of the statements made, Doctor Talbot said that, besides the society's valuable contributions to the knowledge of engineering materials and to specifications, he believed that further information was available from many of its members and that the suggestion for the appointment of such a committee was a valuable one. Dr. W. K. Hatt, a member of the National Research Council, expressed his approval of the plan and outlined in a general way the functions of such a committee, pointing out that there are many research organizations in the country, in universities, industrial plants and elsewhere, and that an economy of energy was to be desired.

Another member of the National Research Council, W. M. Corse, presented a brief but clear statement of the work of that organization, which he declared was ready to cooperate with any committees such as the one suggested. Mr. Corse called attention to the publication of the international critical tables in the form of a volume of 2000 pages, which he characterized as a most important project, particularly from a research point of view.

The Steel Committee's Report

The most important recommendation of the annual report of committee A-1 on steel was the presentation of sub-committee VII on steel castings which recommended a complete revision of the standard specifications for steel castings (A 27-21) in which two classes of castings are provided for, as in the present specifications: Class A with chemical analysis only, and class B having both chemical and physical properties satisfied. In the chemical requirements of the new specifications no change has been made in class B castings, but the carbon for class A has been raised from 0.30 to 0.45 per cent maximum to bring this in agreement with current practice. No change has been made in the tensile strength or yield point requirements for the three grades of class B castings but the ductility requirements for elongation and reduction of area have been raised in all three grades in order to bring these into line with the results now being obtained by modern practices.

Reference to special requirements for castings for railroad rolling stock have been eliminated, since these are now covered by specifications for carbon steel castings for railroads (A 87-22 T). The use of the term "annealing" has been dropped and "heat treatment" substituted, with the requirement that heat treatment shall be in accordance with the society's standard practice, unless otherwise specified by purchasers. These are the principal differences from the present specifications, other changes consisting merely of changes in words to clarify the meaning. There was no contest over this part of the report, which was adopted as in the case of all other committee reports.

Two new sub-committees of committee A-1 on steel had been appointed in the year: Sub-committee XX on plate tolerances, and sub-committee XXI on steel for welding.

Ladle Test Ingots

An interesting appendix to the report of committee A-1 is a complete recital of the investigation of ladle test ingots, made by sub-committee XXI. The report is full of interest and concludes with the following summary:

1. Aluminum treated ingots show approximately 19 per cent less segregation in carbon than the regular ingots.
2. The effect of aluminum treatment on the chemical homogeneity of phosphorus and sulphur is slight.
3. All types of ingots investigated are satisfactory when aluminum treatment is used.
4. Ingots treated with aluminum, due to improved soundness, permit of greater convenience in locating drill holes, and in securing drillings of uniform size free from scale or oxide.

Sulphur and Phosphorus in Steel

The subject of phosphorus and sulphur in steel, which was a feature of annual meeting last year, came before the meeting this year in the form of a preliminary report of the joint committee, which was presented by Doctor Burgess. Nothing was preprinted, but a set of tables in the form of blue prints was available for inspection, which showed the progress of the investigation thus far, which deals with sulphur in three heats of basic open-hearth steel, typifying plate, forging and rail steels. For each heat eight ingots with added sulphur of contents 0.04 to 0.15 per cent were secured. Doctor Burgess explained some of the work as far as it has gone, the investigation paralleling quite closely that of rivet steel, presented a year ago. He also stated that the complete report on rivet steel would be ready for publication a little later and that it presented some interesting relations between the oxygen and sulphur contents. The present investigation on plate steels he reported as about 50 per cent completed. Further elaboration of the tables was given by Mr. Richardson.

J. R. Onderdonk, Baltimore, Md., stated that recently it had been necessary for his company to reject some rivet bar stock which ran 0.13 to 0.14 per cent sulphur after it had been made into rivets. It developed a little later that in order to obtain certain car bodies it was necessary to use these rivets until others could be obtained to replace them. The singular experience in the use of these was that no trouble developed in their fabrication in the regular way.

Gases in Metals

"Gases in Metals" by Louis Jordan, chemist U. S. Bureau of Standards, Washington, was the subject of an interesting paper, which discusses this subject in a broad way and brings up to date the progress which has been made. Briefly the author stated that

"it is a natural assumption that metals prepared and treated in the same manner and having identical chemical compositions should possess the same properties and qualities. Such a condition is, in some instances, apparently not true. In such cases judgment as to similarity of chemical composition is almost always based on results of analyses which are incomplete in that the kinds and amounts of the gases present in the metals are not considered.

"Many methods for the determination of gases in metals have been suggested. Three methods involving complete fusion of the metal in vacuo were judged to be the most promising for the determination of the total gas. A comparison of these methods indicates that direct fusion of metal with the addition of an alloy of antimony and tin does not yield so much oxygen as fusion of the same metal in contact with carbon.

"The relations between solubility of gases in metals and temperature are somewhat different from the usual concep-

tions of the solubility of gases in ordinary liquids such as water. Many observations lead to the conclusion that gases are dissolved in metals chiefly, if not entirely, in the intercrystalline cement.

"Several examples of the supposed dependence of properties or quality of metals on their gas content are familiar in the metallurgy of pig iron, cast iron, steels, and non-ferrous metals. The application of analytical methods for gases in metals to studies of deoxidation processes has already given interesting results.

Methods of Testing

The second report since its reorganization two years ago of committee E-1 on methods of testing was presented at this session. Details of the reorganization were part of last year's annual report.

It will be recalled, says the report, that the committee has adopted a procedure in considering the methods of test prepared by the various standing committees, which in brief is a study of methods from the broad viewpoint of the test as a type of test that may be made upon a wide variety of materials and comprising eventually, the formulation of fundamental considerations that govern the various kinds of testing. Obviously, the development of such a broad program is a question of time, and while gratifying progress is being made along certain lines, the committee at the same time is endeavoring to pass as promptly as possible upon tentative methods of test as they are submitted by the standing committees. The committee calls attention to its statement of a year ago that it does not intend to withhold indefinitely approval of tentative methods that standing committees may desire to see advanced to the status of standard, pending a study of the fundamental principles underlying the various kinds of tests involved in specific methods. The committee does, however, reserve the privilege of reviewing methods thus advanced to standard and submitting criticisms at some future time.

The policy of studying methods from a broad viewpoint will lead to the organization of permanent sub-committees to consider tests of a certain type. Certain of these sub-committees have been organized. It is gratifying to observe that careful preparation of methods of test by the standing committees has been very much in evidence during the past year. Several committees have carefully reviewed methods submitted a year ago and a number of new methods representing considerable study and effort are being brought forward this year.

New Testing Apparatus and Methods

In the realm of new testing apparatus, two papers were presented. L. B. Tuckerman, engineer physicist U. S. Bureau of Standards, presented a paper entitled, "Optical Strain Gages and Extensometers," and exhibited some of the apparatus described. The author discussed the interferometer strain gages and their possible importance in standardization. He described the characteristic types of optical lever systems available with advantages and disadvantages of each and a new optical system and a new instrument.

"New Developments in Electric Telemeters" was a paper presented by O. S. Peters and R. S. Johnston, electrical engineer and engineer physicist, respectively, U. S. Bureau of Standards. The authors described a carbon resistor suitable for many engineering measurements including the measurement of strains, such as are encountered in steel structures under either steady or live rods. They also described some remote-reading and remote-recording features and gave data on field and laboratory tests. Some of the advantages to be obtained from the use of the instruments described are: The remote-reading feature which enables records to be taken in places which are inacessible during tests; simultaneous readings or records on a single strip of paper of phenomena occurring at a number of widely separated points; true reproductions of vibratory strains and pressures obtainable up to several hundred cycles per second, and great savings of time where large numbers of strain or pressure measurements are to be taken in field or laboratory tests.

The annual report of the executive committee was abstracted in THE IRON AGE, June 28.

Non-Ferrous Metals and Alloys

The usual session on non-ferrous metals and alloys was held on Monday evening, June 25, as the first session of the convention, with President Burgess the chairman. The subject which awakened the most interest was the report of committee B-2 on non-ferrous metals and alloys, presented by its chairman, Prof. William Campbell, Columbia University. He announced that during the last year no new specifications have been prepared, but a number of tentative standards were recommended for advancement to standard, namely, those on pig lead (B 29—22 T); copper wire, standard sizes, (B 42—22 T); brass pipe, standard sizes, (B 43—22 T); chemical analysis of brass ingots, (B 45—22T); analysis of bronze bearing metals, (B 46—22 T), and chemical analysis of nickel, (B 42—21 T). Two new sub-committees were formed during the year, one on lead pipe and one on metallic fluxes and deoxidizers.

Test Bars for Non-Ferrous Metals

The report of progress on the study of preparations and methods of casting test specimens for castings received considerable attention from those present. The sub-committee, which has been at work on this subject for the last year, recommended a special form of test bar for comparative test requirements. A diagram of this bar is given in the original report. Of the eleven manufacturers of cast material which have agreed to make a series of comparative tests, some have already reported part of their results, but since these tests were made by the use of a test bar, slightly different from that now recommended by the committee, these tests are not reported.

GUILLIAEM AERTSEN, the new president of the society, was for many years connected with the Midvale Steel Co., Philadelphia. He has been during the past year or two sales representative of the Midvale Steel & Ordnance Co. in its Chicago office and now represents the Bethlehem Steel Corporation in that city

In connection with the report of the foregoing committee, a paper was presented entitled "Methods of Casting Test Specimens of Gun Metals" by E. H. Dix, Jr., chief metallurgical branch, engineering division, air service, McCook Field, Dayton, Ohio. The paper includes results of a series of experiments performed to obtain a satisfactory method for casting test specimens of the alloy referred to. From the results the author recommends a simple method of casting test specimens which are claimed easy to cast, which require a small amount of metal and are easy to cut from the gates, which require no machining and which will give uniform and dependable results. Usually good results were stated by the author to have been obtained on aluminum alloys, as well as upon gun metal.

Exception was taken by several present to the test bar recommended by the committee, and the opinion was quite generally expressed that no form of test bar really represents the metal in a casting. G. H. Clamer, Ajax Metal Co., Philadelphia, and past president of the society, stated that the question of a test bar representing the metal in the casting was an old one which had been agitated for some years and on which very little progress had been made so far as conclusive information is concerned.

Compression Testing of Babbitt Metals

A paper entitled "The Influence of the Ratio of Length to Diameter in the Compression Testing of Babbit Metals" by John R. Freeman, Jr., and Paul F. Brandt, physicist and laboratory assistant respec-

tively, Bureau of Standards, Washington, describes an investigation in which three series of compression tests were made on two representative white metal bearing alloys, a typical tin base and a typical lead base alloy, in which the length of the specimen was varied. The results of the test show that, within the experimental error of the test methods, the unit deformation of a Babbitt metal in compression is independent of the ratio of length to diameter for specimens 1 in. in diameter and between 1 and 3 in. in length.

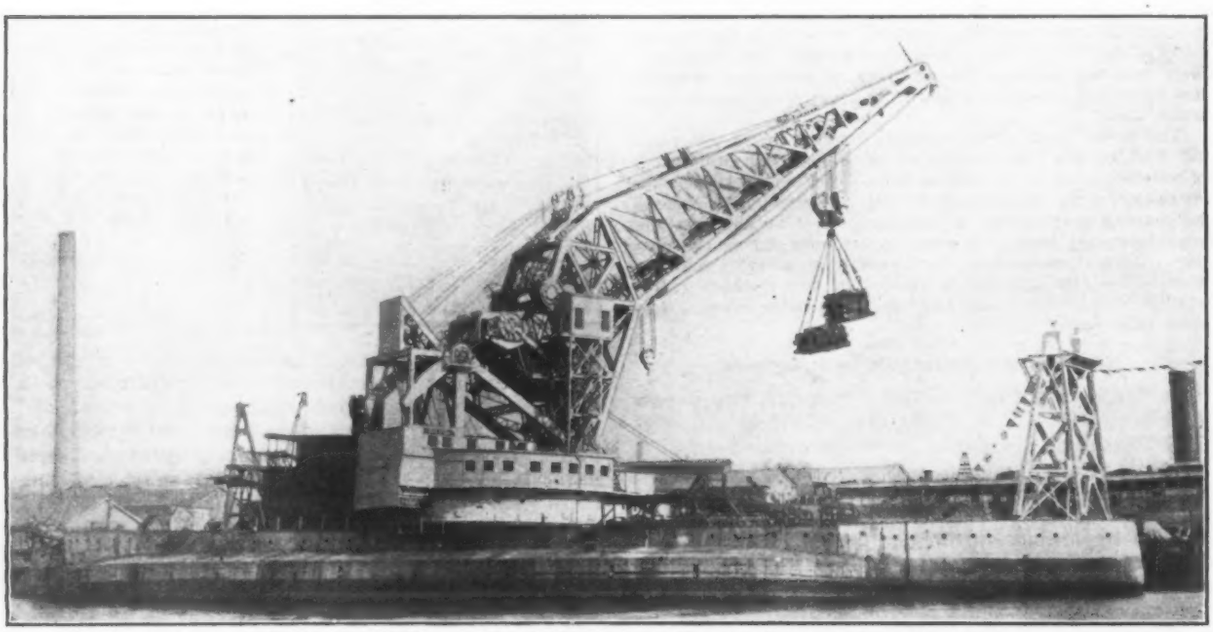
Reports of regular committees included the one by committee D-14 on screen wire cloth, presenting tentative specifications for non-ferrous screen wire cloth; the report of committee E-4 on metallography which submitted revisions of tentative definitions of terms and presented a recommended practice for photography as applied to metallography. The report of committee B-1 on copper wire submitted a revision of standard specifications of hard-drawn copper wire and new tentative specifications for hard-drawn copper trolley wire, for soft rectangular copper wire and for hot-rolled copper rods for wire drawing.

At this session the announcement of the election of new offices was made as follows: Guilliaem Aertsen, Bethlehem Steel Co., Chicago, president; W. H. Fulweiler, chemical engineer, United Gas Improvement Co., Philadelphia, vice-president.

Largest Sea Going Crane

The United States Navy crane ship No. 1 shown in the accompanying illustration is noteworthy as one of the largest floating cranes, and as the only large seagoing crane ever constructed. As in the case of other structures of unusual size the difficulties of design and construction encountered were numerous.

A description of this crane, which was built by the Wellman-Seaver-Morgan Co., Cleveland, was given in THE IRON AGE of Feb. 17, 1921, shortly after the contract was placed. It is a 250-ton revolving unit mounted on the old battleship Kearsarge, and is of the luffing jib type. The jib may be lowered into the cradle provided at the stern of the vessel, and when in this position the ship may be navigated from port to port to serve different navy yards. The ship as refitted will be capable of handling and transporting two three-gun turrets complete with their guns.



United States Crane Ship No. 1, Notable as One of the Largest Floating Cranes and the Only Sea Going Crane Ever Constructed. It has a 250-ton revolving unit of the luffing jib type. The jib is lowered into the cradle at the stern when the ship is navigated

In converting the Kearsarge the hull was changed very little. A foundation was built for the crane and it was necessary to increase the water line breadth by the construction of large bulges on the outside of the hull to prevent excessive lists when handling heavy loads. The rebuilt ship has a length of 368 ft. and 92 ft. beam.

The capacities and arrangement of the main and auxiliary hoists are as outlined in the previous description. The crane is operated by eight General Electric Co. motors, each having a rated capacity of 110-hp., two for the main hoists, one for the auxiliary trolley, one for the auxiliary hoist, and two each for luffing and rotating. The speed of the main hoist is 6 ft. per min.. loaded, and 16 ft. per min. empty. It requires 25 min. to luff from high to low position and 9 min. for rotating one revolution.

The crane runway consists of four rings of 150-lb. rails spaced in pairs over the webs of the foundation girders. It revolves on 46 double-tread cast steel wheels approximately 30 in. in diameter arranged in pairs, each pair being carried in a cast steel equalizing frame. The main crane structure is built upon two main box girders 10 ft. deep, 75 ft. long and having webs spaced 30 in. apart. The counterweight compartment contains 500 tons of armor plate.

The jib is L-shaped and is hinged to the main girder at a point 15 ft. forward from the center of rotation. The hinge pins forming this support are of hollow forged steel 30 in. in diameter and 3 ft. 9 in. long. The jib is made up of two trusses 26 ft. apart at the hinge point and gradually converging to 10 ft. at the point where the main hoist sheaves are fixed. The overhanging leg of the L is about 136 ft. long and supports the auxiliary trolley runway through its entire length. From its lowest position when resting in the cradle to its highest working position the jib turns about its hinge pins through an angle of nearly 60 deg. This movement is accomplished by luffing screws of chrome nickel steel 15 in. in diameter and 28 ft. long and operating through upper and rear nuts. The luffing nuts are of manganese bronze 5 ft. long by 26 in. in diameter and weigh about 5000 lb. each.

The drums of the main hoist are 86 in. in diameter and 8 ft. 4 in. long arranged in tandem, each drum having a driving gear meshing with a common pinion carried on a shaft between the drums. The ropes are 2 in. in diameter of extra flexible monitor plow steel. The main hoist drive consists of one spur gear and one herringbone gear reduction to the hoisting motor. All the operations are controlled by one operator by means of levers located in the elevated cab at one side of the jib.

Meeting of British Foundry Institute

Core Sands and Binders, and Both American and British Steel Foundry Practices Discussed at Manchaster, England

MANCHESTER, ENGLAND, June 15.—The twentieth annual conference of the Institute of British Foundrymen was held in Manchester on June 13, 14 and 15. Oliver Stubbs, who filled the presidential chair for the notably successful year of 1921-1922, was elected president for the ensuing year.

The Lord Mayor of Manchester presented the Oliver Stubbs medal, awarded for high service to the institution, to H. Sherburn of Warrington. R. O. Patterson was elected senior vice-president and next year's conference will be held in Newcastle-on-Tyne. Mr. Stubbs' presidential address was a review of the year's work and he also emphasized the importance of research work and touched on the research organizations of America and Germany.

Oil for Sand Cores and Binders

At the technical session on June 13 a paper was read by Professor Campion and J. McEachen, Kirkentilloch, on "Oil Sand Cores and Binders." It caused an interesting and profitable discussion. The paper gave particulars of experiments with 12 different binders, but as neither the makers' names were mentioned nor the base of the binders, the information given was regarded as almost valueless. Professor Campion explained that the tests had been undertaken because the makers of corebinders could not give exact information.

The authors, both in the paper and in their introductory remarks, stated that river sand was better than sea sand for coremaking, but several speakers contended that sea sand was cleaner, sharper and stronger, and that gas was better than coke for drying. There was much discussion as to the best drying temperature. It was stated that the best way to use any oil binder was first to emulsify the oil with water by stirring until it had the appearance of balm and then mix with the sand. This gave a more uniform sand.

The best contribution to the discussion was by H. M. Lane, an American foundry engineer of international reputation, who gave the results of 15 years' research which cost over £6,000. Mr. Lane said the subject was one of colloid chemistry. It was most important, he said, that core sand should not have both clay and oil, because together they fight. With regard to alleged difficulty in getting uniform results from the same mixture, Mr. Lane said that he had 50 cores made every day from the same mixture for 100 continuous days and on testing these cores he found them in every way uniform. Uniformity was quite possible if the baking temperature were properly controlled. Quick drying of cores was most satisfactory and coarse sand required the minimum quantity of oil. Sand grains should be nearly round to get the maximum strength. In Mr. Lane's opinion, dry sand was not so important if the moisture content were constant, and he thought wind driven sand was in every way most satisfactory for oil sand cores.

Another speaker, following Mr. Lane, said that it would be a great help to small foundrymen if basic principles could be explained and one or two standard tests laid down. Every foundryman should carry out research work with sand deposits near his foundry, because it was better to use local material than to spend money bringing sand from a distance.

Making Steel Castings in United States

At the session on June 14 the first papers to be presented were on the manufacture of steel castings in England and America. In his paper, "The Manufacture of Steel Castings in the United States," Major R. A. Bull, research director of the U. S. Electric Steel Founders Research Group, which, in Major Bull's absence, was presented by H. Cole Estep, reviewed modern American practice, and made it very clear that the electric furnace is making steady headway in America and that crucible steel is almost a thing of the past.

In 1921 there were only 824 net tons of crucible steel castings made in America, whereas ten years previously more than 23,000 tons were produced. The open-hearth furnace is still the most important furnace for steel melting. These open-hearth furnaces are necessarily subdivided according to the basic or acid nature of the furnace bottom. The tonnage of steel castings being made today in the United States from basic open-hearth furnaces is not appreciably different from those produced from acid open-hearth furnaces. Despite the progress being made by the electric furnace the open-hearth furnace is admirably adapted for the major portion of the tonnage of steel casting made in America.

The development of the electric steel furnace industry in the United States has been of extraordinary interest. The present total capacity of the foundries making electric steel castings is probably 250,000 net tons per year or roughly 13 per cent of the total steel foundry capacity. The first electric furnaces to make steel for castings in America were installed in 1908, when 55 tons of such castings were produced. In 1920 the output had grown to 173,819 net tons.

There are probably 300 steel foundries being operated in America and the combined capacity of these is estimated at nearly 2,000,000 tons per year. The widest variety of uses is represented by the consumption just now of probably 75 per cent of the industry's total capacity of about 5000 tons each working day.

Appeal for British Steel Castings Investigation

In the paper on steel castings manufacture in England, F. A. Melmoth made an appeal for a prolonged scientifically controlled investigation into the behavior of mild steel in sand molds and the influence of the various elements on such behavior. Very few steel foundries are in such a position as to be able to afford a full scientific control and the necessary exhaustive investigations. The only hope, therefore, is in some form of communal research organization or in one such as the British Cast Iron Research Association, which, it is safe to say, is now dealing in an organized scientific manner with the solution of problems which have existed during the whole history of cast iron and have often been dealt with previously by rule of thumb or haphazard assumption. No such organization exists where steel castings are concerned, and the formation of such an organization or the future extension of the scope of the organization mentioned to include steel castings, would prove a great boon to the small steel foundries.

Several speakers urged the importance of heat treatment to get good physical results, and altogether better tensile and binding strengths. The matter of fluidity of the molten metal was also discussed and there was much difference of opinion. Dr. Percy Longmuir expressed the opinion that engineers should always specify the work the castings had to do. It was prejudice that was against the basic process, although the electric process was in most cases basic. The casting temperature, said Dr. Longmuir, should depend upon the size of the castings. Aluminum had a tendency to oxidize and to reduce the mechanical and physical properties of steel, but silicon and manganese must be added to the steel in excess for good mechanical properties. The converter gives a high degree of fluidity. Doctor Longmuir, who is research director

of the British Cast Iron Research Association, made the interesting announcement with regard for the need of a fluidity test, that investigations are in hand.

Carbon and Sulphur in Foundry Irons and Castings

A paper entitled "Notes on Carbon in Foundry Irons and Castings" was presented by M. Siegle, professor of metallurgy, Nancy, France. The author had drawn largely from Professor Turner's "Metallurgy of Irons" and several other authorities, German as well as English. The author's remarks on remelting were of interest. A mixture of iron when melted in the cupola seems to leave the average carbon content unchanged. On the other hand, when the iron is remelted in a reverberatory furnace there is always a certain loss of carbon by oxidation due to the oxidizing atmosphere. The importance of this loss depends on several factors. It will be increased if melting is slow or if the area of the bath is large in proportion to the depth. The extreme case of the reverberatory furnace is furnished by the puddling furnace in which the metal is stirred and exposed to the oxidizing atmosphere until the whole of the carbon is burned out, leaving almost carbon free iron.

R. Buchanan, Professor Reid and Doctor Longmuir took part in the discussion on this paper in turn. Doctor Longmuir said the carbon content should be as low as possible. The influence of sulphur is overrated and not so harmful as it is usually considered to be. While chemical analysis is good, it will not solve some problems. Mr. Buchanan said the structure of cast iron was as important as its chemical constitution. The blast furnace has enormous influences outside of chemical analysis, but what these influences are we do not yet know. He agreed that the influence of sulphur is much exaggerated and it gave the necessary combined carbon if a good test were required.

This discussion completed the technical work of the conference, which included visits to the chain making works of Hans Renold, Ltd., Burnage, the Derbyshire Silica Fire Brick Co., Ltd., and a trip on the ship canal from Manchester to Liverpool, a vessel and special facilities being provided by the Manchester Ship Canal Co.

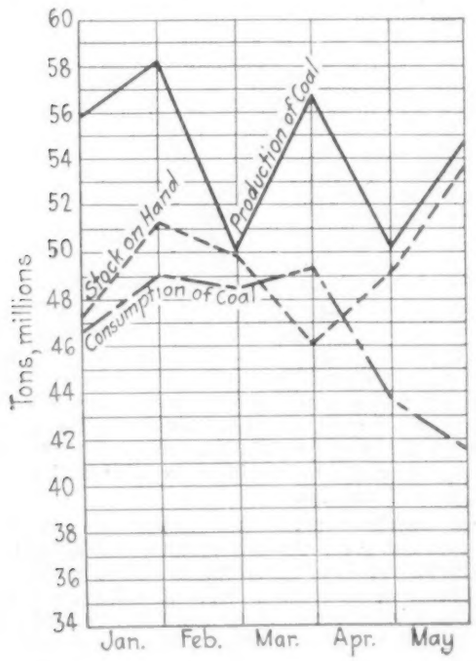
CONSUMPTION OF COAL

Decrease in May—Stocks June 1 Equal to Supply for Forty Days

The chart of the National Association of Purchasing Agents covering the most recent data on coal shows that during May the industrial consumption of hard and soft coal in the United States and Canada was approximately 2,127,000 tons less than during the month of April. As these figures are based entirely on industrial consumption of coal, they reflect a decrease in business of 5 per cent during the month of May.

For April the association recorded a decrease in business for that month of 10 per cent, and during the first quarter of the present year it recorded an increase in business of 9.63 per cent.

The stocks of hard and soft coal in commercial consumers' bins on June 1 were 4,647,800 tons greater than on May 1.



Course of Coal Production, Consumption and Stocks in First Five Months of 1923

Expressed in number of days, the supply on June 1 was sufficient to meet the industrial requirements of the United States and Canada for 40 days. On May 1 the stocks were sufficient for 30 days, and on April 1, sufficient for 29 days.

The estimated total production of hard and soft coal in the United States during May was 4,526,000 tons greater than during April.

The lines on the chart showing the consumption and stocks of coal are drawn from data supplied from all parts of the United States and Canada by commercial consumers of coal, and represent all branches of business and industry. The line showing the production of coal is drawn from figures tabulated and given out by the U. S. Geological Survey.

The figures indicated by the lines on the chart include both bituminous and anthracite coal, and cover the total stocks in the hands of commercial consumers, the total tonnage consumed and the total production by months. (Coal consumed by the householder and his stocks are not included).

Stocks on Hand	Net Tons
April 1, 1923	46,167,000
May 1, 1923	49,022,000
June 1, 1923	53,669,800
Consumption	
Month of March	49,327,000
Month of April	43,659,000
Month of May	41,532,000
Production	
Month of March	56,674,000
Month of April	50,209,000
Month of May	54,735,000

(Of the May production 46,076,000 tons was soft coal and 8,659,000 tons was hard coal.)

Estimated Production of Coal for Two Weeks Ending June 2 and 9

	Bituminous	Anthracite
June 2...	10,091,000 net tons	1,606,000 net tons
June 9...	10,708,000 net tons	2,046,000 net tons

The figures shown for stocks and consumption are estimates based on reports supplied monthly by the consumers.

Comment of Chairman Kuehn

Mark Kuehn, chairman of the National fuel committee of the association, commenting on present conditions, says:

"Although the consumers increased their stocks approximately 4,647,800 tons during the month of May, the additional purchases for stock were judiciously made, and in a manner so as not to disturb the market. This extra tonnage was put in stock for next winter and at the same time almost 4,000,000 tons were laid on the upper lakes docks without stiffening the market; in fact, the soft coal market showed further weakness, and somewhat lower prices were recorded.

"The bituminous market continues to show downward tendencies, and it is possible that still lower price levels will prevail during July. This will offer further opportunity to place additional coal in storage at favorable prices, to the extent that additional coal is stored during the next two months it will relieve the maximum demand upon the railroads expected during the months of September, October and November."

Production on a New High Level

Greater Activity in March, April and May Than at Any Time in the Past—Approximately 10 Per Cent Above the Peak of 1920—Slight Easing Off Expected

BY SIDNEY G. KOON

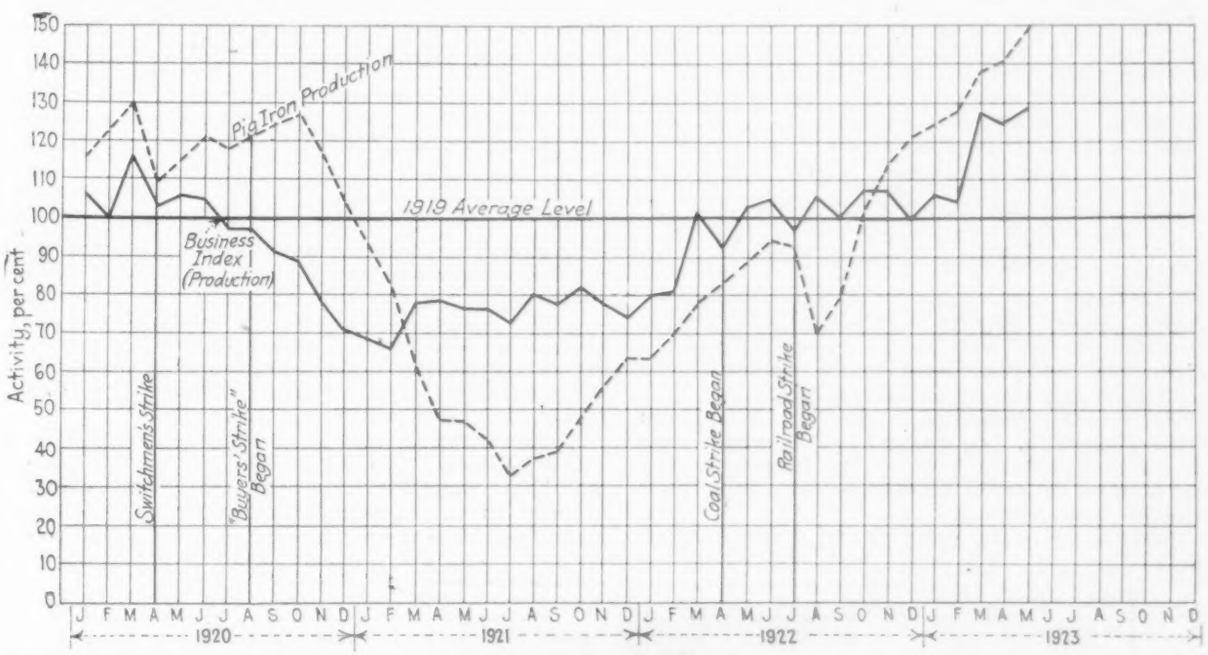
UNPRECEDENTED production of automobiles, buildings, and iron and steel during the past few months has shoved the curve of industrial productivity for the United States far above any level previously reached. A portion of this is essentially a seasonal matter, particularly in building construction and output of automobiles. Inasmuch, however, as all of the ten groups of items covered in the study show increases, and most of them heavy increases, in the March to May period, as compared with preceding periods, the effect of seasonal variation was not solely determinant.

Caution is still being preached and there are not those wanting who predict an early end of the wave of prosperity now flooding the country. This view, however, is by no means universal and recognized authorities look for a continuation of the present high level of activity all through the remainder of the year. The efforts of Secretary Hoover and others to stabilize certain forms of activity in such a way that their peaks will not be superimposed upon the general peak of the curve of business activity ought, if made effective, to extend considerably the era of prosperity before the next business crisis comes upon us. By the same token this effort, looking toward filling in the valleys of the business curve by means of activity artificially deferred from the more feverish period, should maintain a more even distribution of production, a more even employment of labor and of capital and a considerably lessened duration and severity of depression.

As explained in previous reviews on this subject, which have been published at three-month intervals during the past year, the curve is made up on a basis of quantity of production, without any reference to the question of prices. Only in so far as the price level affects the quantity (by curtailing production on the plea that prices are too high) does it get into the equation at all. The 21 separate items covered in the ten groups are as follows:

1—Food: beef, flour and sugar.
2—Building construction.
3—Textiles: cotton and wool.
4—Fuel: anthracite and bituminous coal and petroleum.
5—Vehicles: automobiles and trucks.
6—Leather: belting and sole leather.
7—Lumber: yellow pine, Douglas fir and Northern hardwood.
8—Steel ingots.
9—Non-ferrous metals: copper, lead and zinc.
10—Newsprint paper.

All figures are expressed in their relation to the average monthly output of the calendar year 1919. Each unit which enters the makeup of the curve represents an element of production, although in some instances, as in textiles, it is a question of consumption of the mills. The separate items under each group are averaged and then the direct average taken of the ten group figures.



Productive Activity in the United States Set a New High Record in the Three Spring Months of This Year. As always, the curve of activity in basic commodities such as pig iron shows fluctuations much greater than with manufactured products in general

Compared with the level of 100 for the average month of 1919 and with the high point of 115.7 for March, 1920, the figures for March, April and May of this year, subject to slight revision as fuller details become available, are 127, 124 and 129. The slight recession in April is accounted for by the shorter month, particularly as that shortened month had five Sundays. These figures may be compared again with the levels, running between 100 and 108, through the greater part of the preceding twelve months, and broken only by the temporary setbacks due to the coal and railroad strikes and to the December holidays. The present change has been abrupt, as the curve clearly shows.

How long activity can continue on the new high level is decidedly problematic. In some lines, particularly iron and steel and automobiles, present output is closely up to the capacity of the plants. In fact, the

great rate of forcing of the past year makes it necessary in the near future to curtail operations long enough, in many cases, to get long deferred repairs made. In other cases, such as building construction, we seem to be practically up against the limit of labor supply. Shortage of men, skilled in various branches of constructive activity, is reflected in unprecedented wages and bonuses made imperative by demands which can be enforced only because skilled men to take the places of strikers are lacking. Considerations such as these lead to the belief that activity during the next few months will be less than in the three spring months, not because of slackening demand so much as because of physical inability to continue the pace.

Alongside the curve of productive activity (or business index) has been placed a companion curve of pig iron production. Pig iron does not directly enter the main curve, its place being taken by steel, which is closer to the final consumption point. Being essentially a basic material, the fluctuations in the pig iron curve are far more abrupt and of much greater intensity than in the principal curve. This phenomenon has been observed many times, when comparing basic materials with materials more closely associated with everyday consumption.

In spite of the tremendous activity shown by the curve, wholesale prices are lower than has been the case for some time. The average for May, as reported by the Bureau of Labor Statistics, Washington, is 56 per cent above the average of 1913. This compares with 59 per cent, prevailing through the two months preceding, and with a general level between 55 and 60 per cent for a number of months. Among the items making up the 56 per cent, both building materials and cloths and clothing stand at the top of the list, with an excess over 1913 of more than 100 per cent. Fuel and lighting and furniture and furnishings are from 87 to 90 per cent above pre-war. Metals and metal products at 52 per cent above 1913 are closest of all to the general average. Food and farm products are about 40 per cent above the pre-war level, while chemicals and drugs and a group of miscellaneous items are lowest of all.

It must be emphasized, as has been done repeatedly before, that the boom characteristics of the present situation differ materially from those of 1920. Banking conditions are easy compared with the stringency which then existed. Manufacturers and others are buying more conservatively and more closely to actual needs, instead of stocking up enormous quantities and duplicating orders wholesale in an effort to secure delivery. There has been little evidence in the present movement either of duplication of orders or of the cancellations which accompany that type of market.

Consequently, being on a much more healthy basis in every particular which exerts a major influence upon the situation, the present wave of activity may be expected to continue with only slightly diminished force for several months to come. There should be no sharp curtailment such as we had in the fall of 1920—no buyers' strike on such enormous proportions as then—and if the deferred construction of Government buildings can be well apportioned, when the inevitable depression begins to make itself manifest, we should have such a gradual easing off of the curve of activity that a crisis similar to those in the past may be largely avoided, thus reducing the depth and extent of the depression in the curve, easing up the unemployment problem inseparable from that period and resulting in immense benefit to the country as a whole.

Under-Swing Cut-Off Saw

A high-speed under-swing cut-off saw, which among other applications may be employed in pattern shops for cutting off lumber as it comes from the racks or lumber pile, has been placed on the market by the Oliver Machinery Co., Grand Rapids, Mich.

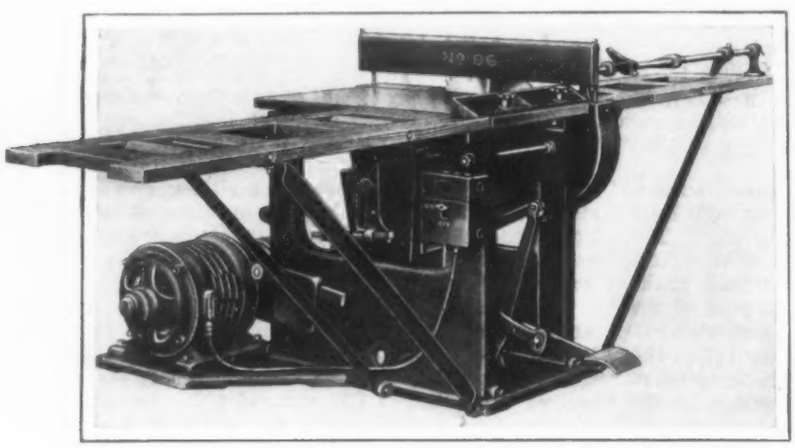
The machine, designated as the No. 96, is shown in the illustration. It represents a departure from the machines hitherto built by the company, which have been of the swing cut-off type, suspended either from the wall or ceiling.

Either belt or motor drive may be applied. Operation is by means of a treadle, pressure on which brings the saw forward. When pressure on the treadle is relieved the saw goes back, quick return being aided by a spring arrangement on the treadle. Operation by the treadle permits the operator to use both hands in handling the material to be cut and does not tire the operator as much as the hand-pull saw.

With a 16-in. saw 2-in. material up to 22 in. wide or 4-in. material up to 16 in. wide may be cut. The main part of the table is of cast iron, 22 in. wide, 36 in. long and 33 in. high from the floor. The two extensions or auxiliary tables are of hard maple fitted with two rollers and the right-hand section has a positive stop gage with three adjustable stops. The forward and back stroke of the saw arbor is adjustable for a short or long stroke, and the spring mechanism mentioned above prevents jerking and jarring on both forward and return adjustment of the saw.

A countershaft is part of the equipment of the belt-driven machine. For the motor drive the sole plate is extended and a 3 or 5 hp. 1800- or 1200-r.p.m, motor mounted on it, and belted through the idler to the saw arbor. A cast iron sawdust chute with rear outlet surrounds the lower part of the saw, and a U-shaped guard, adjustable for thickness of stock, covers the upper part of the saw. A miter gage and a ripping fence may be furnished as extras. With these gages ripping up to 18 in. wide and cross cutting up to 22 in. wide may be done.

The floor space occupied by the machine is approximately 4 x 10 ft. and the weight, crated for shipment, 1000 lb. and 1100 lb. for the belt and motor-driven machine respectively.



Under-Swing Cut-Off Saw With Self Contained Motor Drive. Pressure on the treadle brings the saw forward and quick return of the saw is aided by a spring arrangement on the treadle. Treadle operation is intended to permit the operator to use both hands in handling the material to be cut. With a 16-in. saw, 2-in. material up to 22-in. wide or 4-in. material up to 16-in. wide may be cut. The floor space occupied is approximately 4 x 10 ft.

Steel Making in United States Last Year

Production of Steel Ingots and Castings, Finished Forms of Rolled Iron and Steel, and Miscellaneous Iron and Steel Products —Compiled by the American Iron and Steel Institute

PRODUCTION OF STEEL INGOTS AND CASTINGS.

PRODUCTION OF STEEL INGOTS AND CASTINGS BY PROCESSES.

Years	Open-hearth. Basic.	Open-hearth. Acid.	Open-hearth. Total.	Bessemer.	Crucible.	Electric.	Miscellaneous.	Total. Gross tons.
1908.	7,140,425	696,304	7,836,729	6,116,755	63,631	.....	6,132	14,023,247
1909.	13,417,472	1,076,464	14,493,936	9,330,783	107,355	13,762	9,185	23,955,021
1910.	15,292,329	1,212,180	16,504,509	9,412,772	122,303	52,141	3,194	26,094,919
1911.	14,685,932	912,718	15,598,650	7,947,854	97,653	29,105	2,844	23,676,106
1912.	19,641,502	1,139,221	20,780,723	10,327,901	121,517	18,309	2,853	31,251,303
1913.	20,344,626	1,255,305	21,599,931	9,545,706	121,226	30,180	3,831	31,300,874
1914.	16,271,129	903,555	17,174,684	6,220,846	89,869	24,009	3,622	23,513,030
1915.	22,308,725	1,370,377	23,679,102	8,287,213	113,782	69,412	1,527	32,151,036
1916.	29,616,658	1,798,769	31,415,427	11,059,039	129,692	168,918	604	42,773,680
1917.	32,087,507	2,061,386	34,148,893	10,479,960	126,716	304,543	495	45,060,607
1918.	32,476,571	1,982,820	34,459,391	9,376,236	115,112	511,364	329	44,462,432
1919.	25,719,312	1,229,382	26,948,694	7,271,562	63,572	384,452	2,952	34,671,232
1920.	31,375,723	1,296,172	32,671,895	8,883,087	72,265	502,152	3,535	42,132,934
1921.	15,082,564	507,238	15,589,802	4,015,938	7,613	169,499	945	19,783,797
1922.	28,387,171	921,812	29,308,983	5,919,298	28,606	346,039	.....	35,602,926

PRODUCTION OF STEEL INGOTS.

1908.	6,985,420	539,532	7,524,952	6,096,196	55,360	.....	519	13,677,027
1909.	13,111,467	781,429	13,892,896	9,296,969	94,672	13,456	786	23,298,779
1910.	14,858,353	782,805	15,641,158	9,354,437	107,671	50,821	....	25,154,087
1911.	14,419,306	608,153	15,027,459	7,890,753	83,623	27,227	417	23,029,479
1912.	19,197,504	712,371	19,909,875	10,259,151	100,967	14,147	542	30,284,682
1913.	19,884,465	805,250	20,689,715	9,465,200	103,655	20,973	587	30,280,130
1914.	15,936,985	633,382	16,570,367	6,154,964	78,683	15,458	312	22,819,784
1915.	21,975,622	968,148	22,943,770	8,194,737	99,026	46,348	331	31,284,212
1916.	29,011,146	1,227,832	30,238,978	10,916,248	120,341	126,048	302	41,401,917
1917.	31,528,939	1,406,798	32,935,737	10,320,688	122,882	239,632	261	43,619,200
1918.	31,970,691	1,347,870	33,318,561	9,215,392	113,782	403,068	219	43,051,022
1919.	25,405,347	780,827	26,186,174	7,172,743	62,563	272,942	373	33,694,795
1920.	30,926,393	759,102	31,685,495	8,778,107	70,536	346,956	298	40,881,392
1921.	14,864,607	290,750	15,155,357	3,977,129	6,877	84,404	317	19,224,084
1922.	27,961,190	517,045	28,478,235	5,871,565	27,561	191,057	.....	34,568,418

PRODUCTION OF STEEL CASTINGS.

1908.	155,005	156,772	311,777	20,559	8,271	.....	5,613	346,220
1909.	306,005	295,035	601,040	33,814	12,683	306	8,399	656,242
1910.	433,976	429,375	863,351	58,335	14,632	1,320	3,194	940,832
1911.	266,626	304,565	571,191	57,101	14,030	1,878	2,427	646,627
1912.	443,998	426,850	870,848	68,750	20,550	4,162	2,311	966,621
1913.	460,161	450,055	910,216	80,506	17,571	9,207	3,244	1,020,744
1914.	334,144	270,173	604,317	65,882	11,186	8,551	3,310	693,246
1915.	333,103	402,229	735,332	92,476	14,756	23,064	1,196	866,824
1916.	605,512	570,937	1,176,449	142,791	9,351	42,870	302	1,371,763
1917.	558,568	654,588	1,213,156	159,272	3,834	64,911	234	1,441,407
1918.	505,880	634,950	1,140,830	160,844	1,330	108,296	110	1,411,410
1919.	313,965	448,555	762,520	98,819	1,009	111,510	2,579	976,437
1920.	449,330	537,070	986,400	104,980	1,729	155,196	3,237	1,251,542
1921.	217,957	216,488	434,445	38,809	736	85,095	628	559,713
1922.	425,981	404,767	830,748	47,733	1,045	154,982	.....	1,034,508

PRODUCTION OF FINISHED ROLLED IRON AND STEEL BY LEADING PRODUCTS, GROSS TONS, 1922.

Products.	Iron.	Steel.	Total.
Rails	.....	2,171,776	2,171,776
Plates and sheets	40,845	7,927,552	7,968,397
Nail and spike plate	154	21,815	21,969
Wire rods	665	2,654,076	2,654,741
Structural shapes	1,789	2,716,979	2,718,768
Merchant bars	317,665	3,660,993	3,978,658
Bars for reinforced concrete work	696	575,120	575,816
Skelp, flue, and pipe iron or steel	218,868	2,640,227	2,859,095
Hoops	.....	222,139	222,139
Bands and cotton-ties	2,678	268,423	271,101
Long angle splice bars, tie-plate bars, etc.	59,644	546,044	605,688
Rolled sheet piling, not including fabricated	.....	13,220	13,220
Railroad ties	.....	14,811	14,811
Rolled forging blooms, forging billets, etc.	186	326,117	*326,303
Blooms, billets, sheet bars, etc., for export	.....	11,299	11,299
All other finished rolled products	261,907	1,776,316	2,038,223
Total.....Gross tons.	905,097	25,546,907	26,452,004

ALLOY STEEL INGOTS AND CASTINGS.

PRODUCTION OF ALLOY STEEL INGOTS AND CASTINGS.

Years.	Ingots.	Castings.	Total.	Years.	Ingots.	Castings.	Total.
1909....	158,978	23,002	181,980	1916...	1,306,157	56,458	1,362,615
1910....	538,462	29,357	567,819	1917...	1,576,806	67,529	1,644,335
1911....	425,169	56,290	481,459	1918...	1,721,367	66,485	1,787,852
1912....	689,392	103,109	792,501	1919...	1,435,816	45,372	1,481,188
1913....	625,430	88,927	714,357	1920...	1,591,939	68,353	1,660,292
1914....	577,107	69,846	646,953	1921...	769,293	40,255	809,548
1915....	923,251	97,896	1,021,147	1922...	1,614,392	59,104	1,673,496

Similar statistics are not available prior to 1909.

PRODUCTION OF ALLOY STEEL INGOTS AND CASTINGS, BY PROCESSES, GROSS TONS, 1922.

Processes.	Ingots.	Castings.	Total.
Open-hearth steel—basic	1,341,807	1,792	1,343,599
Open-hearth steel—acid	66,285	26,438	92,723
Bessemer steel	89,234	13,064	102,298
Crucible steel	9,407	50	9,457
Electric and miscellaneous steel	107,659	17,760	125,419
Total.....Gross tons	1,614,392	59,104	1,673,496

In 1922 there were 138 works in 23 States and the District of Columbia which made alloy steel ingots or castings.

ROLLED IRON AND STEEL.

In 1922 the production of all kinds of iron and steel rolled into finished forms shows an increase of 11,677,998 tons, or 79.04 per cent., as compared with 1921.

TOTAL PRODUCTION OF ALL KINDS OF FINISHED ROLLED IRON AND STEEL, 1887–1922.

Years	Iron and steel rails.	Plates and sheets.	Nail plate.	Wire rods.	Structural shapes.	All other finished rolled.	Total. Gross tons.
1887.	2,139,640	603,355	308,432	.....	.....	2,184,279	5,235,706
1888.	1,403,700	609,827	289,891	279,769	.....	2,034,162	4,617,349
1889.	1,522,204	716,496	259,409	363,851	.....	2,374,968	5,236,928
1890.	1,885,307	809,981	251,828	457,099	.....	2,618,660	6,022,875
1891.	1,307,176	678,927	223,312	536,607	.....	2,644,941	5,390,963
1892.	1,551,844	751,460	201,242	627,829	453,957	2,579,482	6,165,814
1893.	1,136,458	674,345	136,113	537,272	387,307	2,104,190	4,975,685
1894.	1,021,772	682,900	108,262	673,402	360,305	1,795,570	4,642,211
1895.	1,306,135	991,459	95,085	791,130	517,920	2,487,845	6,189,574
1896.	1,122,010	965,776	72,137	623,986	495,571	2,236,361	5,515,841
1897.	1,647,892	1,207,286	94,054	970,736	583,790	2,497,970	7,001,728
1898.	1,981,241	1,448,301	70,188	1,071,683	702,197	3,239,760	8,513,370
1899.	2,272,700	1,903,505	85,015	1,036,308	850,376	4,146,425	10,294,419
1900.	2,385,682	1,794,528	70,245	846,291	815,161	3,575,536	9,487,443
1901.	2,874,639	2,254,425	68,850	1,365,934	1,013,150	4,772,329	12,349,327
1902.	2,947,933	2,665,409	72,936	1,574,293	1,300,326	5,383,219	13,944,116
1903.	2,992,477	2,599,665	64,102	1,503,455	1,095,813	4,952,185	13,207,697
1904.	2,284,711	2,421,398	61,601	1,099,028	949,146	4,597,497	12,013,381
1905.	3,375,929	3,532,230	64,542	1,808,688	1,660,519	6,398,107	16,840,015
1906.	3,977,887	4,182,156	54,211	1,871,614	2,118,772	7,383,828	19,588,468
1907.	3,633,654	4,248,832	52,027	2,017,583	1,940,352	7,972,374	19,864,822
1908.	1,921,015	2,649,693	45,747	1,816,949	1,083,181	4,311,608	11,828,193
1909.	3,023,845	4,234,346	63,746	2,335,685	2,275,562	7,711,506	19,644,690
1910.	3,636,031	4,[illegible]5,484	45,294	2,241,830	2,266,890	8,475,750	21,621,279
1911.	2,822,790	4,488,049	48,522	2,450,453	1,912,367	7,316,990	19,039,171
1912.	3,327,915	5,875,080	45,331	2,653,553	2,846,487	9,908,475	24,656,841
1913.	3,502,780	5,751,037	37,503	2,464,807	3,004,972	10,030,144	24,791,243
1914.	1,945,095	4,719,246	38,573	2,431,714	2,031,124	7,204,444	18,370,196
1915.	2,204,203	6,077,694	31,929	3,095,907	2,437,003	10,546,188	24,392,924
1916.	2,854,518	7,453,980	30,088	3,518,746	3,029,964	15,493,093	32,380,389
1917.	2,944,161	8,267,616	22,864	3,137,138	3,110,000	15,585,921	33,067,700
1918.	2,540,892	8,799,135	18,310	2,562,390	2,849,969	14,385,058	31,155,754
1919.	2,203,843	7,372,814	12,832	2,538,476	2,614,036	10,359,543	25,101,544
1920.	2,604,116	9,337,689	20,577	3,136,907	3,306,748	13,941,835	32,347,863
1921.	2,178,818	4,260,574	14,573	1,564,330	1,272,824	5,483,087	14,774,006
1922.	2,171,776	7,968,397	21,969	2,654,741	2,718,768	10,916,353	26,452,004

IMMIGRANTS COMING

Some Relief Promised Iron and Steel Companies Which Have Labor Shortage

WASHINGTON, July 3.—Rush of immigrants to the United States with the beginning of the new fiscal year, last Sunday, means in the opinion of officials of the Department of Labor, that quotas under the 3 per cent law will probably be filled from all countries with the possible exception of certain ones, such as Germany and Russia, long before the year comes to a close. The total number admissible is 357,803. Iron and steel manufacturers and other employers are looking to the incoming immigration as a source of some relief from the labor shortage, though it is understood that they do not consider that the problem is so serious as it was said to be recently. The number of workers that will be obtained from immigrants now entering the United States is not expected to be great, but it is observed that some of them are of a high type. This is particularly true with respect to the immigration from the United Kingdom. It is said that the immigration movement from England, Scotland and Wales is unprecedented and that a large number of them are skilled, some of them in the iron and steel industry, but because of unemployment in those countries, concluded to come to the United States. As a matter of fact, the opinion prevails generally here that protests recently made in the House of Commons against alleged bad treatment of British subjects at Ellis Island was largely a veiled attempt to discourage emigration from Great Britain to the United States and really was not due to sincere apprehension about treatment of British subjects at the New York immigration station.

Following is a statement of the Bureau of Immigration showing the number of aliens admissible during the new fiscal year from some of the more important countries, so far as a source of possible workers for the iron and steel and allied industries are concerned:

Country or Region of Birth	Number Admissible Annually	Number Admissible Monthly
Austria	7,342	1,468
Belgium	1,563	313
Bulgaria	302	61
Czechoslovakia	14,357	2,871
Denmark	5,619	1,124
Esthonia	1,348	270
Finland	3,921	784
France	5,729	1,146
Germany	67,607	13,521
Great Britain and Northern Ireland) Irish Free State)	77,342	15,468
Greece	3,063	613
Hungary (including Sopron district)	5,747	1,149
Italy	42,057	8,411
Latvia	1,540	308
Lithuania (including Memel region and part of Pinsk region)	2,629	526
Netherlands	3,607	721
Norway	12,202	2,440
Poland (including Eastern Galicia and part of Pinsk region)	30,977	6,195
Portugal (including Azores and Madeira Islands)	2,465	493
Rumania	7,419	1,484
Russia, European and Asiatic (excluding the barred zone)	24,405	4,881
Sweden	20,042	4,008
Switzerland	3,752	750
Jugoslavia	6,426	1,285

JAPAN BUYS BELGIAN RAILS

Government Railroads Award 5000 Tons—Tin Plate Still Pending—Foreign Iron Prices High

NEW YORK, June 28.—Export business continues light with continued reports of competition from Continental dealers. Japan is about the only market that continues active in large purchases and some small merchant buying. The Chinese market is unchanged, buyers still offering to pay several dollars a ton less than sellers demand for second-hand plates and similar material. The dullness in wire shorts that has been evident for several weeks, as a result of the refusal of Chinese buyers to come within several dollars of the price quoted by American sellers, seems to have been broken. One exporter in New York with good connections in China reports the sale of about 50 tons of wire shorts at $59 per ton, c.i.f. China.

The two tenders for rails for the Imperial Government Railways have both been awarded. The first, which called for about 1650 tons of 100-lb. rail, was placed with Suzuki & Co., New York; the second, bids on which were opened on June 28, is reported to have been partly placed with a Belgian mill. The original tonnage was 8000 tons of 60-lb. rails. It is reported that 5000 tons was awarded at £9 18s, c.i.f. Japanese port, September-October-November-December delivery, which figuring the American quotation on a basis of $43 per ton, Pittsburgh, or about $56, c.i.f. Japan, is about $10 per ton lower.

The inquiry of the Nippon Oil Co. for a total of 37,500 boxes of tin plate is said to have been postponed, the buyer having asked the mills to make prices firm until July 1 or 2. In addition to these tonnages, there is still pending the 800 tons of structural steel for the First National Bank of Osaka, which may be fabricated in Japan of foreign material. Japanese fabricators would enjoy a certain advantage in submitting bids, as, in addition to the lower freight on plain material because of the smaller space occupied, there is a tariff of about 2.80 yen per ton more on steel that has been fabricated. There are a few small inquiries current from Japan for light gage black sheets, small lots of tin plate, bars and copper wire bars.

Foreign pig-iron prices, although still declining are too high to compete successfully on the Atlantic seaboard. One fairly large importer of Continental pig iron when conditions are favorable reports a recent quotation of $29.50 per ton, c.i.f. Atlantic port, duty paid, for a foundry iron analyzing 2.50 to 3 per cent silicon and phosphorus less than 1 per cent. On a slightly lower silicon, 1.80 to 2.50 per cent, with phosphorus less than 1 per cent, this importer is quoting $29.25 per ton, c.i.f. Atlantic port, duty paid. On both grades July shipment is offered.

An importer, who made a contract with a Hamburg, Germany, furnace for foundry iron, prior to the Ruhr occupation, reports the final shipment, about 760 tons, will arrive in July. An importer of Scotch foundry iron is quoting about $32 per ton, c.i.f. Atlantic port, for No. 3. Recent reports of arrivals of low-priced Continental pig iron are believed by importers to be small lots being shipped by some French furnaces to complete old contracts, upon which shipment was suspended following the occupation of the Ruhr.

The value and growth of research is emphasized in the annual report of the Engineering Foundation, which was founded eight years ago by Ambrose Swasey, president Warner & Swasey Co., Cleveland. Appreciation of research is said to be growing among engineers, industrialists and business men. That research pays in many ways and that support of research is necessary to the prosperity and the continued existence of civilized peoples is being perceived, it is said, even by persons remote from laboratories. The choice is between research and retrogression, says the report.

Freight cars to the number of 9876 were placed in service between May 15 and June 1, according to reports of the American Railway Association. This brought the total for the first five months of the year to 65,660 cars. On June 1 there were on order 107,079 additional cars. Between May 15 and June 1, 161 new locomotives were placed in service, making 1697 in five months. An additional 2041 were still on order June 1.

Machine tool manufacturers in the Cincinnati district will pay higher prices for castings as a result of an increase of $1 per day granted to molders in the union foundries, and which undoubtedly will become effective in open shops. The increased cost ranges from 20 to 50c per 100 lb.

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THE IRON AGE

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Distribution of Steel

Steel production statistics for 1922, just issued by the American Iron and Steel Institute, are given fully elsewhere in this issue. Ingot output amounted to 34,568,418 tons, this being under the production in three war years and one post-war year, while it was 14 per cent above the two best pre-war years, 1912 and 1913. Production of steel castings was 1,034,508 tons, making a similar comparison with past years. Ingots and castings combined were 35,602,926 tons, or much more than double the output in any year prior to 1905.

Production of rolled steel was 25,546,907 tons, which is 74 per cent of the ingot production reported. The usual proportion is about 76 per cent. Rolled iron amounted to 905,097 tons, the smallest tonnage for many years apart from 1921, making a total of rolled material of 26,452,004 tons.

The distribution of steel in the various rolled forms was quite in accordance with the percentages given in the summary on page 99 of the Annual Review Number of THE IRON AGE, Jan. 4, 1923, under the caption "Where Steel Went in 1922." Rails were set at 8 per cent, and now turn out to have been 8.5 per cent. Wire products we estimated at 10 per cent, and rods now prove to have been 10.4 per cent, actual wire products of course falling somewhat short of this. Shapes were set at 11 per cent and are now seen to be 10.6 per cent; while tin plate was put at 5 per cent and comes out 5.05 per cent.

In a year that showed a total production of steel somewhat under that of four other years and over that of all other years one could not expect any particular commodity to distinguish itself by being particularly high or particularly low. Welded tubular goods, however, do make quite a showing, in that the production in 1922 stood second to the production of one year only, 1920, the 2,732,236 tons produced comparing with 3,002,725 tons in 1920. The total includes merchant pipe, black and galvanized, oil country goods, O.D. pipe and boiler tubes. Galvanized merchant pipe made a new record, the 390,140 tons exceeding even the output in 1920. This was, of course, a reflection of the building boom.

Black sheets did even better than tubular goods, as they broke their best previous record, the 2,917,236 tons exceeding by a small margin the 2,886,401 tons that had been recorded for 1920. There was a decrease in sheets 12 gage and heavier, whereby sheets 13 gage and lighter showed a material increase—from 2,519,072 tons in 1920 to 2,616,210 tons in 1922. Their increase in 1922 over 1913 was no less than 78 per cent, whereas rolled steel in general increased only 10 per cent. The chief influence, of course, was that the manufacture of automobiles increased much more than the production of other things involving steel.

The trade was probably not prepared to see galvanized sheet production run as heavy last year as it is now seen to have done, for the 1920 records were cleanly beaten, the 941,960 tons of flat galvanized sheets representing 13 per cent gain and the 73,979 tons of formed products galvanized showing 15 per cent gain.

Tin plate, often considered cognate with sheets, made no particular showing in 1922, the 1,287,671 tons of production being under that of 1917, 1918 and 1920.

Radically Different Attitudes

The Federal Council of Churches, with its usual sense of justice and charity in judging the methods and motives of people in the steel industry, has sent to the press a statement in which, referring to the report of the committee of the American Iron and Steel Institute on the twelve-hour day, it says:

> It was assumed that the appointment of an investigating committee a year ago meant that the industry was about to yield to the urgent request of the President of the United States. It now appears that this action was only a gesture.

The truth is that there is not a particle of evidence to indicate that the investigation which was carried on with great thoroughness for over a year, under the direction of the committee of the institute, was insincere. A real effort was made to ascertain the facts relating to long hours in the industry and the members of the committee made the report which they thought ought to be made. Whether the clerical gentlemen agree with the report or not, they have no right to declare that the investigation was "only a gesture."

The attitude of some of the church critics is

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in striking contrast with that of men in the steel industry who, although they have introduced the three-shift plan in their own plants, have not felt called upon to condemn the report of the institute committee or to make any unfavorable criticism of the investigation. They realize that changes which can be brought about easily under certain conditions are almost if not quite impossible under other conditions. One steel manufacturer who has been instrumental in introducing the short day in his plant has written THE IRON AGE a letter explaining his position, saying:

> We felt it unfair to the industry as a whole to attempt to exploit our accomplishments in a situation such as had arisen. Irrespective of the report of the American Iron and Steel Institute committee, Judge Gary and his associates deserve support for their splendid contribution toward the stability of the industry. We appreciate the monumental task the industry has before it in changing established policies, and far be it from us to tell the others what they can do under the conditions under which they are working. We want always to do just what is best for the largest number and not try to exploit our own accomplishments at the expense of others.

That letter shows the real Christian spirit and we commend it for the consideration of all, whether churched or unchurched, who feel called upon to publish their views in regard to the committee's report.

A "Misinformed" Critic

Of all the criticism of the Iron and Steel Institute's committee on the twelve-hour day one is unique for injecting real humor into an otherwise very serious discussion. Here it is, as taken from its editorial setting in *Chemical and Metallurgical Engineering*, the title telling us that "Messrs. Gary et al Are Misinformed":

> We do not hesitate to say that before the present situation can be remedied, it is absolutely necessary for the "reformers" to recognize the fact that the real men in the industry would not tolerate any condition which they knew was sapping their workers—no matter what the dividend situation or profit and loss account might be. The trouble is they do not know! They get the basis of their opinion from officials, welfare workers, industrial investigators, or common spies, all "insiders." Little of this so-called "information" is in turn based on sincere, impartial investigation by a person who has risen from the ranks of the night shift, or even capable of imagining himself in the worker's job.

Of the nine members of the institute committee, seven have had to do directly with mill operations and six of them date their connection with the steel industry from boyhood years. James A. Farrell was a manual worker in iron and steel plants at 15 and can count years of arduous labors under the twelve-hour turn. Alva C. Dinkey was an Edgar Thomson water boy at 13 and worked from one mill and shop job to another in the years between 1879 and 1893, when he became electrician at the Homestead steel works. E. G. Grace started in the switching yards of the Bethlehem Steel Co. and has been in the thick of blast furnace and mill operations for more than 20 years. John A. Topping's mill and office experience in an Ohio River iron town began when he was 18 and continued for 22 years up to his removal to Pittsburgh as an officer of the American Sheet Steel Co. James A. Campbell as a mill superintendent worked alongside his men for years at Youngstown and has lived with the twelve-hour turn unnumbered days and nights and Sundays. Willis L. King entered the employ of Jones & Laughlin when he was 18 and for more than 50 years his daily employment has been alongside blast furnaces and steel mills. James A. Burden comes of a family which for more than a century has carried on blast furnace and rolling mill operations on the same site. L. E. Block, as chairman of the Inland Steel Co., has made an intimate study of the eight-hour and twelve-hour turns in steel works, and is classed among the men in the industry who are sharply differentiated from the "absentee owner." Judge Gary, the committee's chairman, with the background of a long legal and judicial career, would be likely to show ability in dividing fact from fancy.

By and large, the committee might be expected to know quite a little about what goes on inside steel works and rolling mills and what the worker has thought and now thinks of the twelve-hour turn. Furthermore, there is reason to know that the statements contained in the report were based on a canvass of fact and sentiment covering the entire industry—small companies as well as large—and that there was no failure to get real information "from the inside." Most of the members need only call on memory to bring up a realistic picture from "the ranks of the night shift."

Further Advance in Magnetic Testing

More than a year ago, in comment in these columns on a development in magnetic testing made public at a meeting of steel treaters in New York, it was said:

> This principle may be applied in the not distant future to other properties of steel. The designers of the apparatus [for determining the case hardness of chain] are making just such predictions and assert that it will be possible to correlate the tensile strength and ductility by magnetic tests as easily as the case hardness of steel.

Before the American Society for Testing Materials at Atlantic City last week the same investigators presented the latest results of their highly important work. While the new apparatus they exhibited does not correlate tensile strength and ductility, it is doing something fully as important, namely, determining the different magnetic effects of the quenching or the drawing process on high-speed or other tool steel. The value of such a non-destructive test is obvious. In this case it interprets not only the final condition of the tool but the various heat-treating steps which led to that condition. If the history of a tool which does unusually satisfactory work can be set down accurately in this way, there is a better basis for improved practice than has been attainable heretofore.

An authority on magnetic analysis, discussing the work of the inventor, observes that this form of testing is comparable in its scope with the science of chemistry and that its place in the steel industry will be similar to that of the microscope when the various magnetic characteristics of steels are known and investigated. Fulfillment of

this prediction will be delayed at least by the lack of workers in the field. A plea is made for more interest in the subject, and it is pointed out that it is not so complicated as appears on the surface. It scarcely can be gainsaid that more research in this field by competent analysts will mean much to the progress of metallurgy.

CORRESPONDENCE

The Effects of Vanadium on Steel

To the Editor: In your issue of June 7 I note with special interest the letter of Dr. B. D. Saklatwalla. While in thorough agreement with him on very many points I venture somewhat to join issue with him on some other points, or at least to suggest their qualification. In citing the example of vanadium steel he says:

> It is not the vanadium doing the treating or so called scavenging that imparts to the steel the better physical qualities. It is the vanadium that has escaped the so called treating or scavenging that does the useful work. . . . . The truth of the matter is that vanadium is a carbide forming element and that it brings about the physical properties in steel by its action on the carbide.

My own contention is that the ameliorating action of vanadium on steels is exerted along three separate lines, in which combined powers of action it is absolutely unique among alloys. Its scavenging action is undoubtedly preferential, and is "stronger" than that of the usual cleansing agent, inasmuch as it undoubtedly cleanses "oxygen-clean" steel from the majority of its nitrogen content. And nitrogen is a deadly enemy to good properties of ferrite. I therefore cannot agree with the doctor when he describes the scavenging action of vanadium as "an economical evil in steel making." The moral is of course that vanadium should never be added to steel which has not been cleansed as well as possible by normal means, when the amount of vanadium used in the further scavenging—which should be denitrogenizing rather than deoxidizing—is a small proportion only of that added. The ferrite (whether structurally free or alloyed in pearlite) is thus *indirectly toughened* by the scavenging action of vanadium. It is worthy of note that vanadium-scavenged products, being very fusible, readily rise to the slag from the main mass of steel; the danger of non-metallic inclusions is thus greatly reduced.

In the second place there can be no doubt that a very small amount of vanadium enters into solid solution in the ferrite, *directly toughening* it.

The remainder, and it should be the vast majority, of the vanadium added enters into the composition of the carbides, as Doctor Saklatwalla states, and thus *strengthens* them. In order to get good and constant results these carbides must always be truly complex and not mixed; if the latter, trouble is bound to ensue. The question of non-dissociation, at normal steel making temperature, of one or more of the original components of the alloy used has been in my experience a fruitful source of such trouble.

I am not aware that anybody has claimed anywhere that vanadium is preeminent among the elements in its powers of combining with oxygen. In fact, study of the heats of formation of various metallic oxides, and in practice the comparative ease with which many exothermic reducing reactions upon vanadium oxide can be obtained, shows that it is not. To denitrogenize steel is the chemical attribute of but few of the elements; to denitrogenize it with a fusible product is, as far as I know, the unique attribute of vanadium.

One recognizes and acknowledges with gratitude the very valuable work of Doctor Saklatwalla in the technology of vanadium, but as one of the early commercial workers with the element I beg to put before your readers my views where they do not "march" with his.

J. KENT SMITH.

Sheffield, England, June 18.

GERMAN PRICES SHARPLY UP

Fall in Exchange Rate Partially Met by Increase in Mark Pegging—One Ton of Sheets Now 7,800,000 Marks

(By Cablegram)

BERLIN, GERMANY, July 2.—Foundry iron No. 1 has been advanced by the Pig Iron Association to 3,198,000 m. per metric ton ($18.68 per gross ton, at 0.575c. per 1000 m.), compared with 2,682,000 m. ($23.16, at 0.85c. exchange) last week and with 774,000 m. ($12.97, at 1.65c. exchange) five weeks ago.

Steel has been advanced about 40 per cent by the Stahlbund. Ingots are now 3,382,000 m. ($19.75), compared with 2,415,000 m. ($20.85) last week and with 1,271,000 m. ($21.30) five weeks ago.

Steel bars are now quoted at 4,800,000 m. (1.25c. per lb.), compared with 3,400,000 m. (1.31c. per lb.) last week and with 1,755,000 m. (also 1.31c per lb.) five weeks ago.

Thin steel sheets have been advanced to 7,800,000 m. (2.03c. per lb.), compared with 5,460,000 m. (2.11c. per lb.) last week and with 2,818,000 m. (also 2.11c per lb.) five weeks ago.

[Note: Ten years ago, 7,800,000 m. would have bought a 4000-ton cruiser.—Editor.]

SALE COMPLETED

Youngstown Sheet & Tube Co. Announces Taking Over of Chicago Company

The Youngstown Sheet & Tube Co. has officially taken over the Steel & Tube Co. of America, according to an announcement by James A. Campbell, president of the former company, in connection with an offering of $40,000,000 in 20-year 6 per cent debenture gold bonds, $33,000,000 of which is to be used to reimburse the Youngstown company for expenditures made in acquiring the Steel & Tube properties.

Although the Youngstown Sheet & Tube Co. acquired the Steel & Tube Co. of America under a contract dated Jan. 6, 1923, the completion of the transaction was held up by a temporary injunction, which has recently been vacated by order of a Delaware court. One of the minority stockholders interested in the former proceeding has stated its intention to appeal from the decision of the Delaware court, but counsel for the Youngstown company has advised that such action probably will not succeed in view of the findings of the lower court.

The published statement of the combined assets of the Youngstown Sheet & Tube Co., these assets also including the properties of the Brier Hill Steel Co., recently acquired, shows that the physical properties have a book value of $118,464,000 as of Dec. 31, 1922. Current earnings for the first four months of this year available for depreciation and interest are $9,836,000.

The Youngstown Sheet & Tube Co. will now have an annual ingot producing capacity of 3,060,000 gross tons, representing nearly 6 per cent of the total estimated ingot capacity of the country. The company has 17 blast furnaces with an annual capacity of 2,720,000 gross tons, its steel-producing equipment consists of 40 open-hearth furnaces and five Bessemer converters, while its finishing mills will be able to produce annually 760,000 tons of pipe, 714,000 tons of skelp, 258,400 tons of sheets, 645,000 tons of plates, 2,360,000 tons of semi-finished steel, 225,000 tons of bars, shapes, hoops, bands and bolt and nut rods, 126,000 net tons of wire and 1,350,000 kegs of nails.

Further details of the company's ore reserves, coal properties, etc., will be found on page 167 of THE IRON AGE of Jan. 11, 1923.

Consumption of Steel in Western States

Comparison Made with Production—Hearing of Pittsburgh Basing Point Complaint Continued at Chicago and Milwaukee

CHICAGO, June 30.—Steel production and consumption figures were filed with the Federal Trade Commission by witnesses for the United States Steel Corporation at hearings held here during the week and also at Milwaukee on Friday. These statistics were offered to complete previous testimony given at the sessions of the Pittsburgh base case which were held here earlier in the year prior to the hearings held in the South and the East. It will be recalled that trade reports prepared by salesmen of the Illinois Steel Co. organization were entered to show the steel consumption of users throughout the West and that the production figures of the Illinois Steel Co. were also offered. The testimony during the past week has covered production and shipments by Western independent mills, as well as consumption by certain customers who were not covered by the trade reports.

Among the mill officers who testified were George W. Niedringhaus, president National Enameling & Stamping Co., St. Louis; W. D. Truesdale, secretary and treasurer Inland Steel Co., Chicago; A. C. Joachim, accounting department, Steel & Tube Co. of America, Chicago; J. E. Russell, secretary Interstate Iron & Steel Co., Chicago; H. G. Moore, vice-president and general sales manager Keystone Steel & Wire Co., Peoria, Ill.; F. A. Eisele, general auditor Laclede Steel Co., St. Louis; and John L. Dunlap, assistant auditor American Steel & Wire Co. In most cases these figures covered production of the principal finished steel products for the five years, 1918 to 1922 inclusive, as well as shipments of those products to points east of a line 30 miles east of the Indiana-Illinois State line and shipments west of that line. The purpose of all this testimony is apparently to show that consumption in Western territory exceeds production. Statistics for the five years, 1918 to 1922 inclusive, showing consumption of the principal finished steel products, were filed by the following witnesses: T. H. Robinson, purchasing agent Moline Plow Co., Moline, Ill.; Emil Szebastad, record clerk, purchasing department, J. I. Case Threshing Machine Co., Racine, Wis., P. S. Fuller, J. I. Case Plow Works Co., Racine, Wis.; C. Heggie, president Scully Steel & Iron Co., Chicago; Phillip Robinson, Gary Screw & Bolt Co., Gary, Ind. Charles Moffatt, manager Statistical Bureau, Illinois Steel Co., also submitted reports of consumption for certain customers. Harry J. Miller, operating department, American Steel & Wire Co., Chicago, and H. G. Hestan, statistician American Sheet & Tin Plate Co., Pittsburgh, also filed statements showing shipments of semi-finished steel to their Western plants by the Illinois Steel Co. and Eastern plants of the Steel Corporation. Objection was raised to these figures on the grounds that the picture would not be complete until shipments of semi-finished steel from the Illinois Steel Co. and Minnesota Steel Co. to Eastern finishing plants were also included.

An Interesting Viewpoint

The objection raised to the data offered by Mr. Dunlap of the American Steel & Wire Co., brought out an interesting viewpoint. Mr. Dunlap's statement showed shipments of all wire products from the company's plants east of a line drawn north and south 30 miles east of the Illinois-Indiana State line to points west, and vice versa. It was pointed out by the commission attorneys that this statement would not be complete unless distribution was shown by States and that the dividing line used was purely arbitrary. It will be recalled that a principal argument of the respondent is that Pittsburgh is the center of surplus production and that therefore the law of supply and demand dictates that base prices gravitate to that city. Apparently the view of the commission attorneys is that it is improper to include all plants west of Pittsburgh as far as the line 30 miles east of the Indiana State line as component parts of the Pittsburgh district. Another witness who testified was Harold E. Gregg, order and shipping department, Illinois Steel Co., Chicago. He pointed out that the Carnegie Steel Co. and the Jones & Laughlin Steel Co. both roll certain special sections of bars and shapes which are not rolled by the Illinois Steel Co., and that at the same time the Illinois Steel Co. produces certain sections which are not rolled by the two Pittsburgh companies.

Effect of Barge Movement

The effect of river barge shipments on the Pittsburgh basing point practice was illustrated in Mr. Moore's testimony when it was pointed out that both the Jones & Laughlin Steel Corporation and the Pittsburgh Steel Co. had on occasion sold wire products for water delivery to Louisville and other Southern points at prices below the established Pittsburgh market plus the railroad freight.

Witnesses at Milwaukee included T. Hanson, director of purchases A. O. Smith Corporation; E. T. Mason, secretary Ladish Drop Forge Co.; H. A. Merz, vice-president in charge of purchases Milwaukee Bridge Co.; George J. Steiner, assistant purchasing agent Worden-Allen Co.; C. E. Stone, assistant to the vice-president Chain Belt Co.; H. C. Banks, superintendent Interstate Drop Forging Co.; Clarence Heil, purchasing agent The Heil Co.; C. A. Irwin, president Milwaukee Rolling Mill Co.; W. A. Berenson, purchasing agent Federal Pressed Steel Co.; Walter P. Geschke, purchasing agent Pawling & Harnischfeger Co.; F. E. Haker, assistant manager purchasing department Allis-Chalmers Mfg. Co. All of these companies filed figures of their consumption of steel for the five-year period previously defined. Objection was raised to adding the tonnage used by the automobile parts makers to the consumption statistics for the Chicago territory.

Monday's Hearing at Chicago

CHICAGO, July 2.—The hearing in the Pittsburgh basing point case before the Federal Trade Commission on Monday marked another step in the efforts of the Steel Corporation to show that steel consumption exceeds production in the Chicago district. William G. Gray of the American Iron and Steel Institute filed with the commission a detailed statement of the productive capacity of all individual steel mills classified by districts, showing capacity in ingots, in total finished rolled products, in rails, plates, shapes, bars, including bands, hoops and bar size shapes, sheets and light plates, black plate, tubular products, wire rods, plain wire and surplus rods. E. D. Graff, Joseph T. Ryerson & Son, testified as to the tonnage of bars, bands, hoops, plates and structural shapes invoiced by the companies of Chicago and St. Louis plants, the total being 138,203 tons for 1918, and 136,470 tons for 1919, 165,836 tons for 1920, 60,202 tons for 1921, and 132,563 tons for 1922, or an average for the five years of 126,655 tons. Objection was raised to adding these totals to the consumption figures for the Chicago district on the grounds that much of this steel has already been recorded in the trade reports of consumption for manufacturing users submitted in evidence by salesmen of the Steel Corporation.

A number of witnesses testified to their inability to get their complete requirements in steel from Western mills during certain periods, particularly during 1922 and the early months of 1923.

Iron and Steel Exports Best in 11 Months

May Imports Slightly Below April—First Simultaneous Publication of Exports and Imports Since Last Fall—Pig Iron Imports Still Heavy

WASHINGTON, July 3.—Becoming available simultaneously for the first time since the Fordney-McCumber Tariff Act went into effect on Sept. 22, 1922, figures of the Bureau of Foreign and Domestic Commerce on exports and imports of iron and steel for May, 1923, show a substantial increase in the former and a slight decrease in the latter, when compared with April. Exports of iron and steel in May totaled 203 389 gross tons, valued at $22,720,355, an increase of 25 918 tons over April. Imports in May amounted to 75,885 tons, valued at $2,900 561, a decline of 2018 tons under April. Machinery exports in May were valued at $23,425,442, an increase of only $31,188 over April. Imports of machinery in May were valued at $1,378,275. Metal working machinery exports in May aggregated 7697 in number, with a value of $478,456, as against 7138 with a value of $435,418 in April.

Exports of Iron and Steel
(In Gross Tons)

	May		Eleven Months Ended May	
	1922	1923	1922	1923
Pig iron	3,897	1,848	26,334	28,931
Ferromanganese	11	503	966	3,438
Ferrosilicon	42	94	405	886
Scrap	12,804	3,809	52,136	35,702
Ingots, blooms, billets, sheet bar, skelp	13,091	12,824	49,949	103,725
Iron and steel bars	26,544	15,408	83,106	151,193
Alloy steel bars*	174	210	4,444	2,414
Wire rods	4,367	4,035	37,558	21,754
Plates, iron and steel	16,879	11,229	110,007	97,947
Sheets, galvanized	9,487	12,773	71,544	102,080
Sheets, black steel	34,619‡	12,137	275,505	91,311
Sheets, black iron	584	1,421	5,918	10,440
Hoops, bands, strip steel	2,529	4,286	22,001	35,525
Tin plate, terne plate, etc.	6,291	13,328	70,391	76,468
Structural shapes, plain material	18,132	11,646	107,224	99,973
Structural material, fabricated	4,242	6,436	20,901	80,917
Steel rails	23,812	30,847	196,490	221,540
Rail fastenings, switches, frogs, etc	3,011	5,263	18,587	35,027
Boiler tubes, welded pipe and fittings	15,589	18,292	143,139	152,905
Cast iron pipe and fittings	2,709	3,035	24,691	42,914
Plain wire	12,836	13,814	72,567	83,502
Barbed wire and woven wire fencing	7,791	8,917	33,538	74,436
Wire cloth and screening*	143	109	452	1,454
Wire rope and cable*	543	598	....	5,307
Wire nails	5,797	4,788	46,611	30,304
All other nails and tacks	810	749	6,213	7,753
Horseshoes	109	61	853	941
Bolts, nuts, rivets and washers, except track	1,313	1,393	12,752	16,764
Car wheels and axles†	686	1,835	....	15,441
Iron castings†	972	506	4,504	9,050
Steel castings†	204	947	....	2,763
Forgings†	187	248	....	2,341
Machine screws†	17	....	75	....
Total	230,062	203,389	1,498,993	1,645,146

*Not reported separately prior to January, 1922.
†Previous to January, 1922, reported by value only.

Imports of Scrap by Countries of Origin
(In Gross Tons)

	May, 1923	Eleven Months Ended May, 1923
Sweden	15	216
England	357	12,650
Scotland	1,250	2,127
Canada	12,521	152,396
Mexico	10	305
Cuba	4,237	31,693
Other Sources	....	11,398
Total	18,390	210,785

Exports of iron and steel in May were the largest of any single month since June of last year, when they amounted to 212,295 tons, but were 26,673 tons less than the same month of 1922, with a total of 230,062 tons, or what was considered a pre-war monthly average.

For the 11 months ended with May of this year, exports amounted to 1,645,146 tons, valued at $178,609,083, showing an increase over the corresponding period of last year, with a total of 1,498,993 tons. The heavier export movement in May was due largely to increased shipments of steel rails, the largest item of export in the month, with a total of 30,847 tons, and to fair increases in exports of black steel sheets, plain structural material, boiler tubes and welded pipe and plain wire. There were moderate declines in exports of iron and steel bars, plates and galvanized sheets. Exports of steel bars amounted to 14,280 tons and of iron bars to 1128 tons. Of the rail exports in May, Japan was the largest buyer, taking 13,653 tons, while Cuba ranked second,

Exports, January, 1922, to May, 1923, Inclusive

	Gross Tons		
	All Iron and Steel	Pig Iron	Semi-finished Material
*Average, 1912 to 1914	2,406,218	221,582	145,720
*Average, 1915 to 1918	5,295,333	438,462	1,468,026
Calendar year 1919	4,239,837	309,682	258,907
Fiscal year 1920	4,212,732	248,126	288,766
Calendar year 1920	4,961,851	217,958	216,873
Fiscal year 1921	4,168,619	129,541	82,549
Calendar year 1921	2,213,042	28,305	10,363
January, 1922	160,920	1,043	4,683
February	133,975	1,430	6,627
March	208,843	2,724	10,002
April	198,830	2,750	9,376
May	230,062	3,897	13,091
June	212,295	1,996	13,178
Fiscal year 1922	1,721,418	28,330	63,127
July	157,169	1,943	10,149
August	145,640	1,791	9,353
September	129,475	5,203	6,810
October	132,924	1,553	8,364
November	127,782	3,464	7,157
December	150,170	3,136	8,449
Calendar year 1922	1,986,297	30,922	107,201
January, 1923	123,190	2,482	10,563
February	133,902	2,786	7,733
March	163,920	2,881	11,416
April	177,471	1,844	11,247
May	203,389	1,848	12,824
Eleven months	1,645,146	28,931	103,725

*Calendar years.

Metal Working Machinery Exports

	April, 1923		May, 1923	
	Number	Value	Number	Value
Lathes	81	$66,001	67	$57,138
Boring and drilling machines	131	107,432	135	42,106
Planers, Shapers and slotters	14	20,554	8	17,256
Bending and power presses	26	4,142	24	27,038
Gear cutters	11	9,724	9	17,787
Milling machines	19	26,320	22	24,914
Thread-cutting and screw machines	42	27,362	84	71,476
Punching and shearing machines	69	10,235	30	14,167
Power hammers	19	8,168	18	8,150
Rolling machines	3	1,096	3	3,000
Sharpening and grinding machines	3,073	69,678	3,767	112,779
Chucks, centering, lathe, drill and other metal-working tools	2,833	25,800	2,435	27,080
Pneumatic portable tools	817	58,906	1,095	55,565
Total	7,138	$435,418	7,697	$478,456

Machinery Exports
By Value

	May, 1922	May, 1923	Eleven Months Ended May, 1922	Eleven Months Ended May, 1923
Locomotives	$278,167	$151,911	$17,350,752	$4,948,122
Other Steam Engines	137,005	47,603	714,498	1,089,329
Boilers	55,252	69,683	1,351,775	1,142,438
Accessories and Parts	83,754	78,273	*482,036	961,968
Automobile Engines	616,128	879,878	3,124,168	4,726,224
Other Internal Combustion Engines	338,730	625,334	3,955,103	4,474,088
Accessories and Parts for	234,292	270,611	*1,116,771	2,675,257
Electric Locomotives	10,900	210,000	*1,339,190	2,819,283
Other Electric Machinery and Apparatus	876,791	636,756	14,816,210	6,324,400
Excavating Machinery	238,759	145,796	*701,892	1,449,775
Concrete Mixers	39,541	74,530	365,936	531,684
Road Making Machinery	82,406	182,538	*414,539	1,284,463
Elevators and Elevator Machinery	353,384	500,258	*1,653,758	4,210,062
Mining and Quarrying Machinery	564,998	583,177	*4,793,919	7,019,879
Oil Well Machinery	335,013	402,836	*3,146,283	4,392,195
Pumps	425,405	598,786	5,072,419	6,089,916
Lathes	66,604	57,138	961,285	642,282
Boring and Drilling Machinery	69,424	42,106	*266,448	547,667
Planers, Shapers and Slotters	17,590	17,256	*95,741	219,138
Bending and Power Presses	15,806	27,038	*207,794	160,179
Gear Cutters	6,174	17,787	*22,446	142,812
Milling Machines	25,255	24,914	*107,053	407,329
Thread Cutting and Screw Machines	17,668	71,476	*71,649	329,389
Punching and Shearing Machines	12,610	14,167	*75,884	123,700
Power Hammers	13,188	8,150	*52,827	130,146
Rolling Machines	16,270	3,000	*23,919	148,105
Sharpening and Grinding Machines	83,104	112,779	763,411	844,885
Other Metal Working Machinery and Parts of	313,721	398,765	6,173,976	5,050,247
Textile Machinery	1,520,512	586,458	16,083,407	8,828,184
Sewing Machines	501,674	709,582	5,036,771	7,602,920
Shoe Machinery	79,748	113,034	915,494	1,104,804
Flour-Mill and Gristmill Machinery	97,703	51,643	956,338	971,973
Sugar-mill Machinery	184,276	125,818	3,897,737	3,414,272
Paper and Pulp Mill Machinery	120,701	94,297	2,357,270	1,843,658
Sawmill Machinery	33,569	35,656	546,869	532,977
Other Woodworking Machinery	88,996	74,941	983,213	1,333,536
Refrigerating and Ice Making Machinery	177,877	198,171	1,700,700	1,874,321
Air Compressors	285,430	179,754	1,749,526	2,269,319
Typewriters	1,137,402	1,252,905	9,384,316	11,598,041
Power Laundry Machinery	69,060	94,297	510,809	872,358
Typesetting Machines	432,816	237,000	3,011,174	3,294,586
Printing Presses	266,703	310,334	4,467,217	3,858,836
Agricultural Machinery and Implements	1,770,222	5,019,875	18,443,379	33,534,881
All Other Machinery and Parts	7,328,250	8,059,122	83,262,574	86,835,975
Total	*$19,425,878	$23,425,442	‡$222,558,476	$232,686,603

*January 1 to May 31, 1922.
†July 1 to December 31, 1922.
‡Revised.

taking 5325 tons. Japan also was the heaviest buyer in May of tin plate, taking 4339 tons out of the total of 13,328 tons, and of galvanized wire, taking 4482 tons. Canada was the largest buyer of plates, galvanized sheets, black steel sheets and barbed wire, and took first place as the principal market for iron and steel products for both May and the 11-month period.

The greatest item of increase in May in machinery exports was agricultural machinery, which had a value of $5,019,875, as against $3,982,878 in April. The principal increases of machine tool exports related to thread cutting and screw machines and sharpening and grinding machines. There was a decided drop in exports of boring and drilling machines.

The import movement of pig iron has been of a fluctuating character. While April imports, amounting to 36,371 tons, showed a sharp decline under those of March, with a total of 72,344 tons, imports of May rose above those of April and amounted to 39,764 tons. Of the total pig iron imports of 625,253 tons for the 11 months, 281,917 tons come from England, which provided 25,116 tons of the May iron imports. It is interesting in this connection to observe that British India supplied 3025 tons in May, in view of comment in the trade regarding this movement which has developed recently. For the 10 previous months, imports of pig iron from British India were only 1000 tons.

Declines in imports of scrap and tin plate largely

Imports of Iron and Steel into the United States
(In Gross Tons)

	May, 1922	May, 1923	Eleven Months Ended May 1922	Eleven Months Ended May 1923
Pig iron	4,476	39,764	34,622	625,253
Ferromanganese	5,213	8,651	17,624	102,401
Ferrosilicon	588	1,831	9,493	16,929
Scrap	7,292	18,390	40,969	210,785
Steel ingots, blooms, billets, slabs and steel bars	2,056	699	16,389	24,775
Rails and splice bars	2,962	2,945	22,519	20,547
Structural shapes	237	737	1,371	9,976
Boiler and other plates*	....	1	....	1,504
Sheets and saw plates	34	139	305	983
Bar iron	49	826	2,651	9,626
Tubular products*	....	440	....	2,999
Castings and forgings*	....	358	....	1,429
Nails and screws*	....	127	....	726
Tinplate	84	542	292	9,852
Bolts, nuts, rivets and washers*	....	43	....	164
Wire rods	102	30	1,156	2,481
Round iron and steel wire*	....	230	....	2,331
Flat wire and strip steel*	....	88	....	729
Wire rope and insulated wire, all kinds*	....	44	....	420
Total	23,093	75,885	147,391	1,043,916
Manganese ore	46,517	12,734	212,879	270,472
Iron ore	29,707	263,792	130,501	1,978,571
Magnesite	14,557	20,921	69,059	114,291

*Not reported separately previously to Sept. 22, 1922.

Imports of Machinery and Vehicles

	May, 1922	May, 1923	11 Months Ended May, 1922	11 Months Ended May, 1923
Metal-working machine tools and parts	$25,328	$35,484	$173,291	$340,493
Agricultural machinery and implements	351,680	406,009	1,508,139	2,513,288
Electrical machinery and apparatus*	.....	234,777	.....	400,683
Other power generating machinery*	.....	60,052	.....	1,855,759
Other machinery	304,103	296,060	2,981,637	2,326,637
Vehicles, except agricultural	159,712	345,893	1,536,213	1,973,556
Total	$840,823	$1,378,275	$6,199,280	$9,410,416

*Not reported previous to Sept. 22, 1922.

Imports of Iron and Steel in Gross Tons
(Monthly Averages)

	Total Imports	Pig Iron	Ferro-alloys	Manganese Ore and Oxide*
1909 to 1913, incl.	26,505	†14,132	....	....
1914 to 1918, incl.	23,351	4,645	3,281	‡47,155
1919 to 1921, incl.	23,901	5,708	3,710	37,115
1922	59,545	31,954	9,117	31,204
January, 1923	120,078	83,935	5,120	829
February	67,704	35,793	9,234	4,636
March	106,197	72,344	9,030	12,799
April	77,903	36,371	7,221	14,071
May	75,885	39,764	10,482	12,734
Five months average	89,553	53,641	8,217	9,014

*Not included in "total imports."
†Includes ferroalloys.
‡Average for three years, 1916 to 1918, only.

Imports of Pig Iron by Countries of Origin
(In Gross Tons)

	May, 1923	Eleven Months Ended May, 1923
England	25,116	281,917
Canada	7,787	43,711
British India	3,025	4,025
Germany	2,000	22,584
Belgium	1,525	58,707
France	132	95,894
China	100	702
Sweden	79	863
Scotland	....	109,914
Netherlands	....	2,537
Austria	....	299
Cuba	....	4,100
Total	39,764	625,253

Imports of Manganese Ore by Countries of Origin
(In Gross Tons)

	May, 1923		May, 1923
Brazil	6,285	Turkey in Europe	923
British West Africa	3,211	British India	750
Cuba	1,543	Germany	22

Iron and Steel Exports by Countries of Destination
(In Gross Tons)

	May, 1923	Eleven Months Ended May, 1923
Plates		
Canada	10,197	77,839
Japan	166	1,656
S. America	120	1,010
China	....	2,858
Australia	12	3,209
Galvanized Sheets		
Canada	4,438	30,436
Cuba	1,832	8,408
Argentina	1,158	5,274
Japan	648	3,715
Mexico	625	5,511
Colombia	448	4,733
Central America	432	3,707
China	354	1,818
Australia	335	1,970
Philippine Islands	204	9,433
Dutch East Indies	85	1,006
Tin Plate		
Japan	4,339	22,791
Canada	3,769	22,162
China	2,012	5,029
Argentina	863	3,889
Italy	502	2,768
Cuba	311	2,944
Black Steel Sheets		
Canada	5,722	50,577
Japan	5,613	29,780
Argentina	1,136	3,854
Steel Rails		
Japan	13,653	87,095
Cuba	5,325	35,339
Canada	4,985	26,695
Honduras	2,061	9,493
Kwantung	1,996	3,441
Chosen	....	11,679
Galvanized Wire		
Japan	4,482	12,755
Argentina	2,108	16,117
Canada	1,793	13,836
Chile	1,598	5,719
Brazil	593	6,759
Australia	313	9,500
Barbed Wire		
Canada	1,551	5,776
Argentina	1,538	11,479
West Indies	1,368	8,940
Brazil	1,040	12,711
Australia	487	8,225
Colombia	451	5,222

explain the decrease in the total for that month when compared with April. Moderate increases, however, were made in imports of ferromanganese and ferrosilicon. Of the 2945 tons of steel rail imports, Canada provided 1923 tons; France, 600 tons, and Germany, 422 tons.

Imports of iron ore in May, with a total of 363,792 tons, were more than double those of April, with a total of 171,459 tons. The vast increase in imports of iron ore is shown by the fact that for the 11 months ended with May of this year they amounted to 1,978,571 tons, as against only 130,501 tons for the same period of last year. The greatest single source of these imports for the 11 months of the present year was Cuba, which supplied 572,300 tons, although Sweden ranked a close second, with a total of 571,179 tons, and led in May, with a total of 138,642 tons.

Imports of Iron Ore by Countries of Origin
(In Gross Tons)

	May, 1922	May, 1923	Eleven Months Ended May, 1922	Eleven Months Ended May, 1923
Spain	5,822	64,676	21,580	136,858
Sweden	12,590	138,642	40,407	571,179
Canada	95	2,059	3,835	4,324
Cuba	11,200	55,712	58,347	572,300
Other countries	....	102,703	6,332	693,910
Total	29,707	363,792	130,501	1,978,571

The Interstate Commerce Commission has sent notice to the railroads requesting that in the future traffic and rate committees and publishing officials arrange to publish changes in rates effective on different dates throughout the month instead of the present practice of usually making them effective on the first or fifteenth. The commission said that it will be its purpose also to follow this practice in naming effective dates in its decisions. The purpose is to bring about better tariffs and more orderly procedure. It is declared that under the existing practice offices and printing houses work often under pressure in an endeavor to meet the dates, and errors occur which result in the filing of numerous sixth section (short notice) applications immediately prior to these dates.

The Alabama Co., Birmingham, Ala., has declared a dividend of 15 per cent payable on the $600,000 of first preferred 6 per cent stock. This is to meet two past years' dividends which were not paid. The Alabama Co. is now operating two blast furnaces and is well sold through the third quarter.

BELGIAN MARKET LESS ACTIVE

Buyers Resist High Price Levels—Export Demand Unsatisfactory

BRUSSELS, BELGIUM, June 20.—Although the trend of the Belgian iron and steel market remains firm, the fever of the last two weeks has somewhat abated, and the volume of business transacted at today's Brussels Bourse shows a considerable decrease from last week's operations. Since the reversal of the tendency took place, at the beginning of June, sellers have pushed up prices as vigorously as they could and it was natural to expect some reaction on the part of purchasers. This is exactly what happened today, when purchasers made an effort to release the market from the pressure of high prices, and to this end they have been withholding orders.

On the other hand, the export demand, in spite of the depreciation of Belgian currency, is far from being really active and British producers, notably, are avoiding import of Belgian products into Great Britain by offering prices much below those officially quoted. For instance, British hematite pig iron, nominally quoted £5 15s. f.o.b, is sold, in certain cases, at £5 6s. to £5 9s.

However, some good orders in Belgian products from America and Spain have been reported. Pig iron, as well as steel and iron products, are closing firm. Sheets are more neglected.

Today's current quotations, with exchange at 18.78 fr. per dollar, are as follows, at producing works or f.o.b. Antwerp:

	Fr. Per Metric Ton
Chill-cast foundry pig iron, No. 3 P. L.	450 to 480
Ordinary basic pig iron	410 to 415
Chill-cast foundry pig iron, No. 3 P. L., from Luxemburg or Lorraine, f.o.b. Antwerp	470
Semi finished steel (basic):	
Ingots	450 to 500
Blooms	500 to 525
Billets	550 to 575
Sheet bars	575 to 600
Skelp	825

Luxemburg steel works are quoting the following prices, f.o.b. Antwerp:

	Fr. per Metric Ton
Ingots	500
Blooms	550
Billets	600
Sheet bars	625

Lorraine steel works are quoting the same prices as the Luxemburg works, (all basic quality), except for sheet bars, which they offer at 610 to 625 fr., f.o.b. Antwerp.

	Fr. per Metric Ton
Merchant bars	625
Merchant bars from Lorraine, f.o.b. Antwerp, (French currency)	580
Merchant bars from Luxemburg, f.o.b. Antwerp	650
Rails	520 to 620
Beams	600 to 625
Angles	625
Rods	750 to 775
Wire rods	800
Hoops	900
Merchant iron: No. 2	600 to 625
Merchant iron: No. 3	625 to 650
Iron for making bolts	625 to 650
Iron for making horseshoes	725 to 775
Sheets: 5mm. and over	670 to 675
3 mm.	725
2mm.	750
1½ mm.	950
1 mm.	960 to 975
0.5 mm.	1,050

Above for basic quality; 25 to 30 fr. more for open-hearth.

	Fr. per Metric Ton
Galvanized wire	1,250 to 1,300
Barbed wire	1,350
Plain wire	1,000 to 1,100
Paris nails (pointes de Paris)	1,150
Structural steel, erected	1,250

The Hunter Crucible Steel Co., which recently acquired the plant of the Electric Steel & Forge Co., Cleveland, is making a number of changes to that plant, due to a change in the product. The new company will make alloy and carbon tool steels. A 30-pot crucible furnace and a car type annealing furnace are being installed. An extension 60 x 100 ft. to the main building with a 20-ft. leanto is being built to provide room for a warehouse and for shipping and inspection departments.

Interesting Events Relating to Labor

Addresses of President Harding and Attorney-General Daugherty and Action of Miners Cause Much Comment at the National Capital

BY L. W. MOFFETT

WASHINGTON, July 3.—Whether by chance or design, events concerning labor and capital developed the latter part of last week in a series of interesting instances. One followed so closely upon the heels of the other that casual observation might lead to the belief that they were timed for the occasion. Whether any of them were directly and purposely connected is speculative only, but in any case simultaneous development of some events in this field was merely a coincidence. This chain of events stretched from the Atlantic seaboard through Washington to Indianapolis and to Butte and Helena, Mont. It began at Indianapolis.

In that city last Thursday, Attorney-General Daugherty had Judge Anderson of the United States District Court nolle indictments against 226 coal operators, officials of the United Mine Workers and mining companies on the charge of conspiracy to violate the Sherman anti-trust law. Then followed publication of a letter from Chairman John Hays Hammond of the Federal Fact Finding Coal Commission warning anthracite coal miners in session at Scranton, Pa., that "public sentiment will not tolerate the suspension of its anthracite coal supply with the beginning of the fall and winter season." Almost at the same time, President Samuel Rea made a sharp answer to criticism of the Railroad Labor Board of the Pennsylvania Railroad for the alleged failure of the latter to abide by the decision of the board. Mr. Rea in effect declared that the Pennsylvania Railroad was following the precepts of a Supreme Court decision and was thoroughly within its constitutional rights in the handling of its labor problems. On Friday members of the United Mine Workers at Scranton, soon after receipt of the letter from Mr. Hammond, unanimously adopted demands to be presented in the immediate future to the coal operators for a two-year contract with a 20 per cent increase in the scale of wages.

Old Demand Repeated

This is virtually the same demand which developed the strike of last year when the miners returned to work after almost six months of idleness without an increase in wages, but maintaining the scale under which they had stopped work. They have, however, for the present refrained from taking action on the question of suspension of operations in case negotiations with coal operators run beyond Aug. 31, when the present contract expires.

At the same time this action of the United Mine Workers was taken, the most important and significant development took place at Butte and Helena. At those points, hotbeds of I. W. W'ism, President Harding delivered addresses that were rather startling. In a way, they were construed as a challenge to both capital and labor and likewise a defense of both, particularly of organized labor. The President served notice that he was prepared to defend organized labor against "those who hoped that the Administration would lend itself to their program of breaking down organized labor and sending it back to the era of individual bargaining for the individual job." The President then immediately followed this statement with the assertion that "on the labor side of the line were those who hoped by exorbitant demands, and an attitude of uncompromising insistance, to force the nationalism of some of our most important industries and services." The President declared that "between these two extreme groups, and confident that we had behind us the overwhelming public opinion of the Nation, we have tried to hold the scales even—to prevent on the one side the destruction of organized labor and, on the other side, to frustrate those programs which look to the ultimate destruction of private capital and the nationalization of all the national instrumentalities of production."

The President and the Railroads

The inference was given that the President in his reference to attempts to break down organized labor may have had the open shop movement in mind generally but that he particularly had in view what he apparently considers unjustified disregard by some of the railroad lines with respect to decisions of the Railroad Labor Board. At least it was interesting to observe that the President's statement came so quickly after that of President Rea. The President had previously during his present trip denoted irritation at the attitude of the Pennsylvania Railroad and it is even said that when he left Washington for the West he broke a precedent of many years by traveling over the Baltimore & Ohio Railroad instead of the Pennsylvania.

Students of economic conditions as affected by relations between capital and labor are firmly convinced that the events of last week constitute a series of elements that will crystallize into an Administration policy of far-reaching importance. Obviously there has been talk of the political phase of the matter as well.

Tracing over the events in the order named, these observers have given them certain interpretations that are interesting. The action of the Department of Justice in having indictments dismissed against the United Mine Workers Union and coal operators was not a genuine surprise, although accepted as being a curious turn of affairs. It will be recalled that previously the present Administration sought this action but was held up apparently because Judge Anderson was not then in accord with the idea. Attorney-General Daugherty, however, last week expressed confidence that a verdict of "not guilty" would be the inevitable result of trial of the case. It will be remembered that the indictments were returned during the final days of the Wilson Administration at the earnest behest of former Attorney-General A. Mitchell Palmer.

Mr. Daugherty's Strong Language

It was charged that coal operators and members of the union were guilty of conspiracy in taking up negotiations regarding wages, working hours, etc. The operators and members of the union retorted that they had been indicted for the precise thing which they had been asked to do during the war days by the Wilson Administration to stimulate production. It is said that Attorney-General Daugherty conceived that it would be inconsistent under this circumstance to seek an indictment. At the same time, it is considered strange that the Attorney-General in his statement last week before the court made a stinging statement in which he charged directly that many of the alleged controversies between organized miners and operators were pure fakes, which, he said, in substance, had as their object the fleecing of the public. It is felt that the Attorney-General himself was curiously inconsistent in asking for the dismissal of a formal charge of conspiracy when in the same breath he made the same charge in a more sweeping and blunt manner than ever made before by a high Government officer. The upshot, it is pointed out, is that the Government has left a public odium on the operators and miners, and that it should either prove its case or give them a clean bill of health.

It was reported that one of the purposes of seeking dismissal of the indictments was to "tranquilize" the coal industry. Apparently, if this were the object, it was partly defeated by the statement of the Attorney-General himself, and further weakened by the resumption by the anthracite miners of excessive wage demands. The letter of Chairman Hammond of the Coal Commission, may, it is said, have been an influence in at least preventing the miners from going to the limit of threatening immediate strike, if negotiations are not completed with coal operators before expiration of the existing wage contract. The turn of events taken by the anthracite miners naturally carries significance with respect to the bituminous coal labor situation inasmuch as the United Mine Workers represent both fields, though obviously there are different conditions applying in the two.

As a sidelight, it was a matter of interest that President John Lewis of the United Mine Workers delivered a tirade against W. Z. Foster and his ilk, who were dubbed as "international buzzards." This outbreak is not held to have been particularly significant. It is recalled with some amusement, that organized labor which now castigates Foster and his communistic followers so severely, worked under the Foster leadership during the days of the 1919 steel strike. Now that Mr. Foster is pretty nearly down and out, organized labor is delivering a few well-directed kicks at him and the radical policies he represents.

The President's speeches in Montana no doubt will be a source of a great deal of comment. They are construed as meaning that he has become irritated over what he considers to be excessive performances of capital on the one side and labor on the other and that he sought vigorously to admonish both, and to make it clear that he would not yield to either.

American Foundrymen to Visit the Paris Congress

British and French Associations Arranging on an Elaborate Scale for the Reception of Visitors from the United States— Tours of British, French and Belgian Plants

THE tour now being arranged by the American Foundrymen's Association in connection with the International Foundrymen's Congress and Exhibition which will be held in Paris in September, under the auspices of the Association Technique de Fonderie, is growing in importance as the plans of those in charge are further developed. H. Cole Estep, chairman of the association committee on international relations, has sent out from London an itinerary of the tour, with details so far as they have been arranged of the meetings that are to be held both in Great Britain and on the Continent. While the invitation to American foundrymen was extended on behalf of the French association, the British portion of the tour includes events of particular interest, as will be seen from the program given below. Already a number of representatives of the foundry trade have announced their intention of going and it is expected that the party will be increased by later acceptances.

The tentative list of those who will make the tour includes the names of V. E. Minich, American Foundry Equipment Co., New York; Stanley G. Flagg, Jr., and G. H. Clamer, Philadelphia; C. E. Hoyt, Chicago, secretary American Foundrymen's Association; J. S. McCormick and Q. S. Snyder, Pittsburgh; Jesse L. Jones, East Pittsburgh, Pa.; Dr. Richard Moldenke, Watchung, N. J.; John Hill, Cincinnati; C. S. Gilbert, Toronto. A number of those named will be accompanied by their wives and other members of their families.

The arrangements for the tour are in charge of Thomas Cook & Sons, under the direction of Stanley G. Flagg, Jr., Philadelphia, vice-chairman of the committee on international relations of the American Foundrymen's Association.

The different branches of the Institute of British Foundrymen and of the French and Belgian foundrymen's associations are making elaborate arrangements for the entertainment of the American delegation. Opportunities will be given to visit many of the most prominent European foundries and other manufacturing plants and to study European methods under the best auspices.

In London the Iron and Steel Institute will be one of the hosts. Another feature will be the visit to the shipping, engineering and machinery exhibition at Olympia, London.

The proceedings of the convention at Paris, Sept. 12-15, will include a discussion of international specifications for cast iron and papers on gray iron, steel and malleable foundry practice. Sessions will be held in English as well as in French.

Itinerary of the Tour

(In a few cases the arrangements are tentative and in others some slight changes may be made at a later date).

	1923	
	August	
Saturday	18	Leave New York in SS. Leviathan.
Friday	24	Arrive Southampton, proceeding immediately to London via special boat train.
Saturday	25	Trip by motor car to Windsor, inspection of the castle and tea, by invitation of London local committee.
Sunday	26	No arrangements.
Monday	27	Plant visitation London district. Dinner dance in the evening to which all members of the American delegation will be invited by the Iron and Steel Institute and London branch of the Institution of British Foundrymen.
		BRITISH TOUR
Tuesday	28	3:30 p.m. (probably). Leave for Sheffield from St. Pancras Station. 7:06 p.m. Arrive Sheffield. Royal Victoria Station Hotel.
Wednesday	29	Plant visitation at Sheffield, with reception and dinner in the evening by Sheffield branch, Institution of British Foundrymen.
Thursday	30	Excursion by motor to the Peak District and the Dukeries, Haddon Hall, Blythe, Edinstowe, Ollerton, Budby, Worksop and Anston.
Friday	31	2:22 p.m. Leave Sheffield. 5 p.m. Arrive Manchester. Midland Hotel. Dinner of welcome given by the National Ironfounding Employers' federation at the Midland Hotel.
	September	
Saturday	1	Excursion visiting Smithfield Market, University, Royal Infirmary, Whitworth Institute, Trafford Park, Salford Docks, Manchester Docks, Town Hall, Albert Square, Cathedral, Royal Exchange, Art Gallery, and Ship Canal.
Sunday	2	Probably will be devoted to a visit to Chester, an English city first settled by the Romans.
Monday	3	Plant visitation Manchester district.
Tuesday	4	2:50 p.m. Leave Manchester. 4:50 p.m. Arrive Birmingham. Queen's Hotel.

Wednesday	5	Plant visitation Birmingham district, with reception in the evening by Birmingham and Coventry branches of Institution of British Foundrymen.
Thursday	6	Plant visitation Coventry district.
Friday	7	Excursion by motor car to Kenilworth, Guy's Cliff, Warwick Castle, Stratford-on-Avon, Memorial Theatre, Harvard House, Trinity Church and Anne Hathaway's Cottage, etc. 4:24 p.m. Leave Leamington. 5:55 p.m. Arrive London. Cecil Hotel.
Saturday	8	London; no arrangements.
Sunday	9	London; no arrangements.
Monday	10	London. Official visit to Shipping, Engineering and Machinery Exhibition, Olympia.
Tuesday	11	2 p.m. Leave London for Paris with Institution of British Foundrymen party, via Dover-Calais. 9:40 p.m. Arrive Paris. Lutetia and other hotels.
		INTERNATIONAL FOUNDRYMEN'S CONGRESS
Wednesday	12	9 a.m. Registration of visitors, distribution of badges, and reception at the Ecole des Arts et Metiers, Boulevard de l'Hopital. 10 a.m. Opening ceremony by the secretary for technical education of the French Government, followed by a technical session. 3 p.m. Visit to the exhibition of foundry and shop equipment and the school foundries and workshops.
Thursday	13	9 a.m. Technical session in English, with papers by members of A.F.A. and I.B.F. 2:30 p.m. Plant visitation, Paris district.
Friday	14	9 a.m. Technical session. 1 p.m. Luncheon at the Eiffel tower, visit to the tower machinery. 3 p.m. Visit to Paris foundries.
Saturday	15	9 a.m. Final technical session. 1 p.m. Meet at the pleasure boat *Le Touriste,* on which luncheon will be served, for excursion to St. Gervais and visit to the forest and castle. 5:30 p.m. Return to Paris. 7:30 p.m. Interallied Foundrymen's banquet.
Sunday	16	No arrangements.
Monday	17	Paris, sightseeing.
		CONTINENTAL TOUR
Tuesday	18	5 p.m. Leave Paris, Gare de l'Est. Dinner on train. 9:42 p.m. Arrive Nancy. Grand and other hotels.
Wednesday	19	Plant visitation Nancy district, including trip to a salt mine.
Thursday	20	Leave Nancy by motor car for American battle fronts via Mousson, St. Mihiel and Verdun to Metz. Hotel Royal and other hotels.
Friday	21	10:57 a.m. Leave Metz; lunch on train. Arrive Namur 4:54 p.m., leave Namur 5:50 p.m. 7:55 p.m. Arrive Liege. Hotel de Suede and other hotels.
Saturday	22	9 a.m. Visit to Cockerill Works, the Conduit d'Eau plant, and Fabrique Nationale works in separate parties. 2 p.m. Visit to the forts of Liege with a reception by the colonel commanding. Reception and dinner in the evening by Belgian Foundrymen's Association.
Sunday	23	9:26 a.m. Leave Liege. 10:35 a.m. Arrive Brussels. Motor char-a-banc to meet train for three-hour drive around city. Hotel Metropole.
Monday	24	8:52 a.m. Leave Brussels. 11:19 a.m. Arrive Lille. Hotel Bellevue and other hotels. 1 p.m. Leave by train for visitation to Croix works of International Harvester Co. of America.
Tuesday	25	9:10 a.m. Leave Lille. 12:10 p.m. Arrive Paris. Hotel Wagram.
Wednesday	26	Leave Paris by boat train for Cherbourg and embark on White Star Line SS. Homeric.
October Tuesday	2	Due to arrive in New York.

Judge Gary's Position on Seven-Day Week and Twelve-Hour Day

Judge Elbert H. Gary, chairman United States Steel Corporation, in a letter to H. L. Bowlby, general secretary of the Lord's Day Alliance of the United States, dated June 23, replying to an inquiry as to his attitude toward the six-day week, said:

"Immediately after the armistice was signed we entirely discontinued the seven-day week, and since that time have been operating on the six-day basis. I am not aware of any infringement. If we should learn of any a remedy would be promptly provided.

"We do not believe in the seven-day week. Also, we are actually opposed to the twelve-hour day and are hoping that in the comparatively near future that will be eliminated."

Pratt & Letchworth Co. Merged with Dayton Malleable Iron Co.

BUFFALO, July 2.—Sale of the Pratt & Letchworth Co., Buffalo, to the Dayton Malleable Iron Co. became effective today. The Pratt & Letchworth foundry is the oldest in Buffalo and has an annual output of 40,000 tons of malleable, gray iron and steel castings. The present officers will be continued. The original business of the company was the manufacture of carriage and saddlery hardware and later it entered the manufacture of railroad equipment. About 1500 men are employed. John C. Bradley is chairman of the board of directors. Under the terms of the transaction, stockholders in the Pratt & Letchworth Co. surrender their shares for stock in the Dayton company. The sale was announced in THE IRON AGE May 31, page 1607.

Large Foundry Additions to Plant of Cadillac Motor Car Co.

DETROIT, July 2.—Plans have been completed for the erection of three large foundry units to be added to the main plant of the Cadillac Motor Car Co., Detroit, a division of the General Motors Corporation, according to an announcement June 30 by H. H. Rice, president of the Cadillac company. The new foundries will be utilized for the production of gray iron, aluminum and brass castings used in the Cadillac car. Construction is expected to start in the near future and the new additions will have a capacity equal to the main plant production and will also match that plant in its layout and efficiency.

De Bardeleben Coal Company Organized

BIRMINGHAM, Ala., July 3.—De Bardeleben Coal Corporation is the name of the merger of the Empire, Corona and De Bardeleben Coal companies in Alabama. Henry T. De Bardeleben is president, Wilton H. Fies vice-president and operating manager and G. M. Bowers secretary and treasurer. They occupied such offices with the De Bardeleben company that has been absorbed. Cassatt & Co., Drexel & Co. and other investment bankers have underwritten $4,000,000 of 6½ per cent bonds to fall due at the rate of $200,000 each per annum from 1924 to 1949. The estimated value of the absorbed properties is stated at $7,678,000. Annual coal production for five years has averaged 1,114,000 tons and average net earnings of merged companies in same period have been $1,052,000 per annum. The coal is available both for river and rail shipment and the merged companies already have exceptional bunkerage and export facilities at Mobile, New Orleans and Pensacola besides shipping to Galveston and Houston out of Mobile. The proceeds of the bonds will be applied in part in payment of the absorbed properties. The new company was incorporated in Delaware and has taken out an Alabama charter with $3,000,000 of capital stock here.

JUNE PIG IRON OUTPUT

Less Than May But Larger Than April —Decline from May 2484 Tons Per Day

Eight Furnaces Blown In and Seven Blown Out—Net Gain of One

According to data collected largely by telegraph, the blast furnace production of the country in June shows a moderate halt in the rapid advance which has characterized the trend in the last few months. While the total last month is less than the May total it is interesting to note that it is larger than the April output, with which it can properly be compared, as they are both 30-day months. Although the daily output in June was less than that of May by about 2 per cent, it was about 3800 tons per day larger than the April rate.

Production of coke and anthracite pig iron for the 30 days in June amounted to 3,668,413 gross tons, or 122,280 tons per day, as compared with 3,867,694 tons, or 124,764 tons per day in May, a 31-day month. The April total, a 30-day month, was 3,549,736 tons, or 118,324 tons per day. The June increase over April was therefore 118,677 tons or 3856 tons per day, both 30-day months. There were eight furnaces blown in and seven blown out, a net gain of one, which compares with a net gain in May of 11 and in April of 14.

The total number of furnaces in blast on July 1 was 322, as compared with 321 on June 1 and 310 on May 1. The capacity of the 322 furnaces operating on July 1 is estimated at about 125,000 tons per day, as compared with 125,100 tons per day for the 321 furnaces in blast on June 1.

The ferromanganese production in June was 19,719 tons, or close to the average output for the preceding five months. The spiegeleisen output last month was the heaviest this year at 18,289 tons, or nearly twice the quantity made in May.

Daily Rate of Production

The daily rate of production of coke and anthracite pig iron by months, from June, 1922, is as follows:

Daily Rate of Pig Iron Production by Months—Gross Tons

	Steel Works	Merchant	Total
June, 1922	62,534	16,167	78,701
July	62,295	15,297	77,592
August	45,672	12,914	58,586
September	53,856	13,935	67,791
October	66,060	19,032	85,092
November	72,177	22,813	94,990
December	75,179	24,398	99,577
January, 1923	79,991	24,190	104,181
February	80,684	26,251	106,935
March	87,881	25,792	113,673
April	90,145	28,179	118,324
May	96,029	28,735	124,764
June	90,976	31,304	122,280

The figures for daily average production, beginning with January, 1917, are as follows:

Daily Average Production of Coke and Anthracite Pig Iron in the United States by Months Since Jan. 1, 1917—Gross Tons

	1917	1918	1919	1920	1921	1922	1923
Jan.	101,643	77,799	106,525	97,264	77,945	53,063	104,181
Feb.	94,473	82,835	105,006	102,720	69,187	58,214	106,935
Mar.	104,882	103,648	99,685	108,900	51,468	65,675	113,673
Apr.	111,165	109,607	82,607	91,327	39,768	69,070	118,324
May	110,238	111,175	68,002	96,312	39,394	74,409	124,764
June	109,002	110,793	70,495	101,451	35,494	78,701	122,280
July	107,820	110,354	78,340	98,931	27,889	77,592	.....
Aug.	104,772	109,341	88,496	101,529	30,780	58,586	.....
Sept.	104,465	113,942	82,932	104,310	32,850	67,791	.....
Oct.	106,550	112,482	60,115	106,212	40,215	85,092	.....
Nov.	106,859	111,802	79,745	97,830	47,183	94,990	.....
Dec.	92,997	110,762	84,944	87,222	53,196	99,577	.....
Year	104,619	105,496	83,789	99,492	45,325	73,645	.....

Among the furnaces blown in during June were the following: The new No. 2 Northern furnace of the Witherbee-Sherman Co., in New York, and the Musconetcong furnace in New Jersey; "D" furnace of the Bethlehem Steel Co. in the Lehigh Valley; one Temple furnace in the Schuylkill Valley; the Sheridan furnace of the Lavino Furnace Co., in the Lebanon Valley; the Sharpsville furnace in the Shenango Valley; the fourth River furnace in northern Ohio and the Sheffield furnace of the Sloss-Sheffield Steel & Iron Co. in Alabama.

The furnaces blown out or banked during June were the following: The Ella furnace of E. W. Mudge & Co. in the Shenango Valley; the Rebecca furnace in the Shenango Valley; the Norton furnace in Kentucky; the Hannah furnace of the Republic Iron & Steel Co. in the Mahoning Valley; one Central furnace of the American Steel & Wire Co. in northern Ohio, and the Napier and Standard furnaces in Tennessee.

Output by Districts

The accompanying table gives the production ot all coke and anthracite furnaces for June and the three months preceding:

Pig Iron Production by Districts, Gross Tons

	June (30 days)	May (31 days)	April (30 days)	March (31 days)
New York	250,625	266,658	235,553	226,668
New Jersey	26,033	24,605	18,758	12,551
Lehigh Valley	91,978	93,493	87,366	83,690
Schuylkill Valley	120,704	123,061	108,744	97,065
Lower Susquehanna and Lebanon Valleys	64,372	64,609	46,682	44,558
Pittsburgh district	737,773	789,330	769,672	790,708
Shenango Valley	164,962	169,708	146,032	136,502
Western Pa.	198,006	221,369	199,177	180,926
Maryland, Virginia and Kentucky	89,164	107,613	103,245	109,253
Wheeling district	149,067	157,071	146,303	134,026
Mahoning Valley	378,196	383,068	362,843	383,469
Central and Northern Ohio	289,453	309,261	298,797	319,774
Southern Ohio	74,798	77,402	60,344	51,186
Illinois and Indiana	617,502	646,913	556,223	534,680
Mich., Minn., Mo., Wis. and Colo.	157,579	160,456	144,723	140,354
Alabama	239,200	249,810	241,674	254,239
Tennessee	19,901	23,267	23,600	24,219
Total	3,668,413	3,867,694	3,549,736	3,523,868

The fluctuations in pig iron production for 1913 to the present time are shown in the accompanying chart. The figures represented by the heavy lines are those of the daily average production by months of coke and anthracite iron. The dotted curve on the chart represents monthly average prices of Southern No. 2 foundry pig iron at Cincinnati, local No. 2 foundry iron at furnaces in Chicago, and No. 2X at Philadelphia. They are based on the weekly quotations of THE IRON AGE.

Production of Coke and Anthracite Pig Iron in the United States by Months, Beginning Jan. 1, 1919—Gross Tons

	1919	1920	1921	1922	1923
Jan.	3,302,260	3,015,181	2,416,292	1,644,951	3,229,604
Feb.	2,940,168	2,978,879	1,937,257	1,629,991	2,994,187
Mar.	3,090,243	3,375,907	1,595,522	2,035,920	3,523,868
Apr.	2,478,218	2,739,797	1,193,041	2,072,114	3,549,736
May	2,108,056	2,985,682	1,221,221	2,306,679	3,867,694
June	2,114,863	3,043,540	1,064,833	2,361,028	3,668,413
½ year	16,033,808	18,138,986	9,428,166	12,050,683	20,833,502
July	2,428,541	3,067,043	864,555	2,405,365	.....
Aug.	2,743,388	3,147,402	954,193	1,816,170	.....
Sept.	2,487,965	3,129,323	985,529	2,033,720	.....
Oct.	1,863,558	3,292,597	1,246,676	2,637,844	.....
Nov.	2,392,350	2,934,908	1,415,481	2,849,703	.....
Dec.	2,633,268	2,703,855	1,469,086	3,086,898	.....
Year*	30,582,878	36,414,114	16,543,686	26,880,383	.....

*These totals do not include charcoal pig iron. The 1922 production of this iron was 224,731 tons.

Production of Steel Companies—Gross Tons

Returns from all furnaces of the United States Steel Corporation and the various independent steel companies, as well as from merchant furnaces producing ferromanganese and spiegeleisen, show the foregoing totals of steel making iron, month by month,

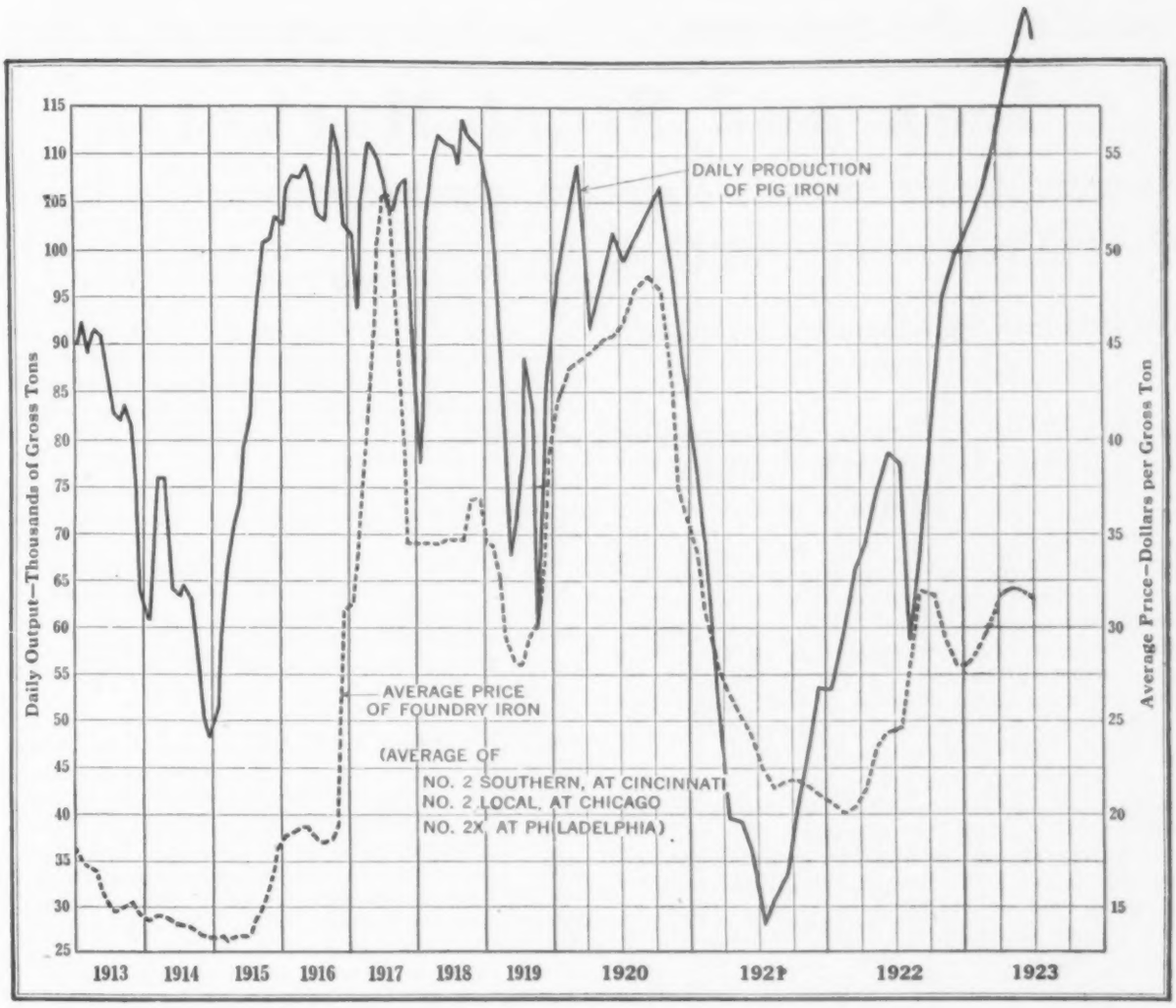


Diagram of Pig Iron Production and Prices

together with ferromanganese and spiegeleisen. These last, while stated separately, are also included in the columns of "total production."

Production of Steel Companies—Gross Tons

	Total Production		Spiegeleisen and Ferromanganese			
			1922		1923	
	1922	1923	Fe-Mn	Spiegel	Fe-Mn	Spiegel
Jan.	1,306,045	2,479,727	6,874	1,230	19,358	12,056
Feb.	1,311,170	2,259,154	3,610	4,930	21,383	3,657
Mar.	1,629,982	2,724,305	11,600	2,095	20,730	13,832
Apr.	1,707,902	2,704,360	14,998	4,211	20,808	7,440
May	1,879,180	2,976,892	15,432	4,902	19,568	9,533
June	1,876,033	2,729,294	18,273	4,817	19,719	18,289
6 mos.	9,710,312	15,873,732	70,787	22,185	121,566	64,807
July	1,931,138	.....	18,873	7,176	.....	.....
Aug.	1,415,832	.....	11,402	7,925	.....	.....
Sept.	1,615,696	.....	10,681	4,235	.....	.....
Oct.	2,047,873	.....	9,193	12,283	.....	.....
Nov.	2,165,295	.....	13,232	4,192	.....	.....
Dec.	2,330,545	.....	17,007	10,591	.....	.....
Total	21,216,691	.....	151,175	68,587	.....	.....

Amendments made by the biennial session of the Wisconsin Legislature to the State workmen's compensation act and approved by the Governor have the effect of increasing the cost to employers 9.5 per cent over the former cost. Benefits to injured workmen are subject to an increase of 13.5 per cent on an average. The maximum weekly compensation is increased from $16.90 to $18.20, and the maximum amount payable for a single injury is raised to $16,380, which is in the case of a person 30 years old or under who is permanently disabled totally.

Shipments to Pacific Coast

BIRMINGHAM, ALA., July 2.—The movement of Birmingham iron and steel products to the Pacific Coast via Mobile and latterly via Pensacola still continues regular in volume as well as variety. Practically all Pacific ports are touched. A cargo of a vessel leaving Mobile recently was as follows: For Los Angeles, 334 tons of pig iron, 56 tons of sanitary pipe, 48 tons of pressure pipe, 150 tons of nails and wire; for Oakland, 983 tons of pig iron; for San Francisco, 48 tons of hoop steel, 117 tons of pressure pipe, 161 tons of sanitary pipe and 146 tons of nails and wire; for Tacoma, 530 tons of cast iron pipe; for Seattle, 398 tons of wire and nails, 87 tons of cast iron pipe and 100 tons of pig iron; for Honolulu via San Francisco, 50 tons of pressure pipe and 58 tons of sanitary pipe. On the same day, the following cargo left for Japan: For Dairen, 3000 tons of rails; for Kobe, 15,000 lb. of splice bars, 10,000 lb. of spikes and 2300 lb. of bolts and nuts. The same day Buenos Ayres took 125 tons of wire and Havana 16 tons of barbed wire.

Fewer holders of United States Steel Corporation common stock were reported at the closing of the books for the June dividend, the number having diminished 1059 from the March figure, 94,198. This compares with 78,944 in May, 79,353 in February and the high mark of 107,439 reported in the last quarter of 1921. Since the date last noted, the number of common stockholders has fallen off every quarter, excepting the first quarter of this year. Preferred holders numbered 78,944 in May and 79,353 in February.

Iron and Steel Markets

SUSTAINED CONSUMPTION

Pig Iron and Steel Ingot Output Slightly Less

Further Decline in Primary Materials—Less Lake Ore Needed—Mill Shutdowns Limited

The steel trade enters upon the second half of 1923 with production of pig iron only 2 per cent and that of steel ingots about 5 per cent below the year's peak reached in May. There is no measurable change in the large volume of product moving into consuming channels. Prices of the important forms of finished steel are at a stand, but buyers are getting better delivery promises and are keeping orders close to known needs.

As has been the case for several weeks, primary materials are giving ground, fresh declines being reported in coke, pig iron and scrap.

Pig iron figures for June, received on the first business day of July, show an output last month of 3,668,413 tons, or 122,280 tons a day, against 3,867,694 tons in the 31 days of May, or 124,764 tons a day. Eight furnaces blew in last month and seven blew out, 322 furnaces being active on June 1, against 321 one month previous.

Humidity cut down the output in June, and a further slight falling off is looked for in July, as several furnaces are going out for relining. Active capacity May 1 was 125,100 tons a day and was practically unchanged on June 1.

A number of sheet mills are closed down this week; some few will be idle next week also. The Steel Corporation's shutdowns are limited at most plants to July 4, and this is the program also of most independent companies.

Generally speaking, labor shortage and weather conditions are offsetting in part the tendency of some rolling mills to catch up with their orders. Final specifications on second quarter contracts came in freely last week, indicating that consumers want what they have bought.

The week's fabricated structural steel contracts were brought up to the average of recent weeks by unusual purchases, totaling 11,500 tons, for oil tanks. Private projects continue noteworthy among structural inquiries. Some recent bids on fabricated work indicate that plain material was figured considerably below the 2.50c. basis.

That business in finished steel was better in June than in May was due chiefly to rail and other railroad buying. The gain shows no change of attitude by manufacturer buyers, who mostly placed small tonnages for specified purposes and definite deliveries.

The sheet market is inactive and the concession of $1 a ton on black sheets continues. The mill shutdowns will bring supply and demand into closer relation. The automobile companies are buying body sheets rather more freely, some for third quarter and some for shorter periods. The Ford Motor Co.'s July schedule is 7040 cars a day, or 176,000 cars for 25 working days.

A good deal of tin plate inquiry has come up for July and August shipment, including one lot of 500,000 boxes and another of 100,000 boxes.

Variations in bolt, nut and rivet prices are still a feature, with evidences of weakness in several quarters.

In the pig iron market, on limited sales, price recessions are general. Basic iron has declined $1.50 to $25.50, Valley, and 2500 tons was sold at $25.25. Prices on both foundry and steel making grades are down $1 at Chicago and on resales charcoal iron has been sold $3 below furnace quotations. In Buffalo, Cleveland and eastern Pennsylvania quotations on foundry grades have receded, while in the South $25, Birmingham, still prevails.

Lake iron ore shipments were heavy in June, reaching 9,499,500 tons, making the total 16,185,482 tons to July 1. But with the expected curtailment in pig iron production in the Middle West some furnaces will not take as much ore as they planned early in the season. In consequence, mining operations will not be pushed and the 1923 Lake Superior output is now estimated at nearer 55 million tons, whereas 60 millions was the early season figure.

Of the recent rail awards by the Imperial Government Railways of Japan about 5000 tons is reported to have gone to a Belgian mill at £9 18s c.i.f. Japan, or not far from $46.

It takes 7,800,000 marks this week to buy a ton of sheets in Germany, or as much as would have bought a 4000-ton cruiser ten years ago, but at current exchange this is only 2.03c. per pound. Sharp advances in German iron and steel prices on July 2 did not offset the fall in exchange and the steel bar quotation, for example, is equivalent to 1.25c. per pound and No. 1 foundry iron to $18.68 per gross ton.

For nine weeks THE IRON AGE finished steel composite price has stood at 2.789c. per lb.—within 1½ per cent of the highest point in 28 months.

Lower than it has been since the first week of February last, THE IRON AGE pig iron composite price is now at $26.79 per gross ton, against $27.79 last week. It is now more than $4 below its high point in March and April.

Pittsburgh

Steel Prices Maintained—Pig Iron, Coke and Scrap Are Weak

PITTSBURGH, PA., July 2.—Continued weakness in the primary materials, coke, scrap and pig iron, still is without influence on steel prices, which generally are well maintained. June business in finished steel products was better than that for the previous month, but the gain reflected no change of attitude on the part of buyers toward the market, as it was made up chiefly of small tonnages for a specific purpose and for a specified delivery. Indeed, buyers have continued to move with extreme caution with regard to their future requirements, and it is noted that they have not ex-

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics

At date, one week, one month, and one year previous

For Early Delivery

Pig Iron, Per Gross Ton:	July 2, 1923	June 26, 1923	June 5, 1923	July 3, 1922
No. 2X, Philadelphia‡	*$29.76*	$30.76	$30.76	$27.64
No. 2, Valley furnace†	26.50	26.50	29.00	24.00
No. 2, Southern, Cin'ti†	29.05	29.05	29.55	22.55
No. 2, Birmingham, Ala.†	25.00	25.00	25.50	18.50
No. 2 foundry, Chicago*	*29.00*	30.00	32.00	24.00
Basic, del'd, eastern Pa.	*28.00*	28.14	28.14	25.75
Basic, Valley furnace	*25.50*	27.00	27.50	25.00
Valley Bessemer, del Pitts.	29.27	29.27	30.77	26.77
Malleable, Chicago*	*29.00*	30.00	32.00	24.00
Malleable, Valley	26.50	26.50	29.00	24.50
Gray forge, Pittsburgh	27.77	27.77	30.27	25.27
L. S. charcoal, Chicago	36.65	36.65	36.65	31.65
Ferromanganese, furnace	125.00	125.00	130.00	67.50

Rails, Billets, Etc., Per Gross Ton:				
O.-h. rails, heavy, at mill	$43.00	$43.00	$43.00	$40.00
Bess. billets Pittsburgh	42.50	42.50	43.00	35.00
O.-h. billets, Pittsburgh	42.50	42.50	45.00	35.00
O.-h. sheet bars, P'gh	42.50	42.50	4500	35.00
Forging billets, base, P'gh.	47.50	47.50	55.00	40.00
O.-h. billets, Phila	47.67	47.67	50.17	40.17
Wire rods, Pittsburgh	51.00	51.00	51.00	40.00
	Cents	Cents	Cents	Cents
Skelp, gr. steel, P'gh., lb.	2.45	2.45	2.45	1.70
Light rails at mill	2.25	2.25	2.25	1.70

Finished Iron and Steel, *Per Lb. to Large Buyers:*	Cents	Cents	Cents	Cents
Iron bars, Philadelphia	2.72	2.72	2.72	1.925
Iron bars, Chicago	2.50	2.50	2.60	1.80
Steel bars, Pittsburgh	2.40	2.40	2.40	1.70
Steel bars, Chicago	2.60	2.60	2.60	1.75
Steel bars, New York	2.74	2.74	2.74	2.04
Tank plates, Pittsburgh	2.50	2.50	2.50	1.70
Tank plates, Chicago	2.80	2.80	2.80	1.75
Tank plates, New York	2.84	2.84	2.84	2.04
Beams, Pittsburgh	2.50	2.50	2.50	1.70
Beams, Chicago	2.70	2.70	2.70	1.75
Beams, New York	2.84	2.84	2.84	2.04
Steel hoops, Pittsburgh	3.30	3.30	3.30	2.50

Sheets, Nails and Wire, *Per Lb. to Large Buyers:*	July 2, 1923 Cents	June 26, 1923 Cents	June 5, 1923 Cents	July 3, 1922 Cents
Sheets, black, No. 28, P'gh.	3.85	3.85	3.85	3.15
Sheets, galv., No. 28, P'gh.	5.00	5.00	5.00	4.15
Sheets, blue an'l'd, 9 & 10	3.00	3.00	3.00	2.40
Wire nails, Pittsburgh	3.00	3.00	3.00	2.40
Plain wire, Pittsburgh	2.75	2.75	2.75	2.25
Barbed wire, galv., P'gh.	3.80	3.80	3.80	3.05
Tin plate, 100-lb box, P'gh.	$5.50	$5.50	$5.50	$4.75

Old Material Per Gross Ton:				
Carwheels, Chicago	*$21.00*	$21.50	$22.50	$18.50
Carwheels, Philadelphia	22.00	22.00	23.00	17.50
Heavy steel scrap, P'gh.	*20.00*	20.50	21.50	17.50
Heavy steel scrap, Phila.	17.50	17.50	18.00	15.00
Heavy steel scrap, Ch'go.	*17.25*	17.50	18.50	15.00
No. 1 cast, Pittsburgh	*22.50*	23.50	25.00	19.00
No. 1 cast, Philadelphia	*21.00*	22.00	23.00	17.50
No. 1 cast, Ch'go (net ton)	21.50	21.50	22.00	17.00
No. 1 RR. wrot. Phila.	21.00	21.00	23.00	17.00
No. 1 RR. wrot. Ch'go. (net)	15.00	15.00	16.00	13.50

Coke, Connellsville, Per Net Ton at Oven:				
Furnace coke, prompt	$4.75	$4.75	$4.75	$8.50
Foundry coke, prompt	5.50	5.50	5.75	9.00

Metals, *Per Lb. to Large Buyers:*	Cents	Cents	Cents	Cents
Lake copper, New York	*15.00*	15.12½	15.25	13.75
Electrolytic copper, refinery	*14.50*	14.75	14.75	13.50
Zinc, St. Louis	**5.75**	5.70	6.40	5.35
Zinc, New York	**6.10**	6.05	6.75	5.70
Lead, St. Louis	*6.55*	6.70	7.05	5.55
Lead, New York	*6.85*	7.00	7.30	5.75
Tin (Straits), New York	*38.50*	40.37½	41.87½	....
Antimony (Asiatic), N. Y.	**6.95**	6.75	7.00	5.00

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.
†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

The prices in the above table are for domestic delivery and do not necessarily apply to export business.

Composite Price July 2, 1923, Finished Steel, 2.789c. Per Lb.

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets

June 26, 1923,	2.789c.
June 5, 1923,	2.789c.
July 3, 1922,	2.169c.
10-year pre-war average,	1.689c.

These products constitute 88 per cent of the United States output of finished steel

Composite Price July 2, 1923, Pig Iron, $26.79 Per Gross Ton

Based on average of basic and foundry irons, the basic being Valley quotation, the foundry an average of Chicago, Philadelphia and Birmingham

June 26, 1923,	$27.79
June 5, 1923,	28.46
July 3, 1922,	24.19
10-year pre-war average,	15.72

perienced much trouble in finding accommodation on early delivery orders without the necessity of having to bid prices up to get them.

The pig iron market still is unsettled because buyers apparently are looking for lower prices before there is a turn in the other direction. On a sale of 1500 tons of basic to a Sharon, Pa., consumer price of $25.50, Valley furnace, a decline of $1.50 from the nominal quotations of previous weeks, was developed.

Sharply lower prices again have been reached on old material, while the coke market now is at a parity on both spot and contract tonnages of furnace grades. A contract was made following our last report at $5, but since then another one has been made at $4.75.

This week will be marked by a considerable suspension of sheet mill activities in this and nearby districts, manufacturers having decided upon this week as a good one to make mill repairs as well as to afford the crews a vacation. The Jones & Laughlin Steel Corporation, however, plans a suspension lasting only over the Fourth of July in most departments. McKeesport Works, National Tube Co. will be down from the day before the holiday until the end of the week. Other plants of this company will be in operation except on the holiday, and the general plan of the Steel Corporation is merely to suspend for the day. Loss of steel production probably will not be as great as that in the finished products, since it is in the finishing mills, where the suspension will be most extensive.

Pig Iron.—Various reports are current as to the price paid by the National Malleable Casting Co. on 3000 tons of basic iron for its Sharon, Pa., plant. One report is that the iron, or some of it, was purchased at $25.76, delivered, which would figure back to $25, furnace, but this report could not be confirmed. On 1500 tons, it is known the price was $25.50. This business is the only important test the market has had on basic grade since a week ago, and buyers are not convinced that it developed as low a price as may yet be done. Such business as has been done in other grades has been at the prices of a week ago. The market still lacks activity, and as there is a good deal of iron piled on furnace yards in Pittsburgh and nearby districts, and as most of the merchant furnaces will have completed present orders by Aug. 1, it must still be regarded as a situation more favorable to buyers than sellers, especially if to those circumstances may be added the fact third quarter coke tonnages have lately

been placed as low as $4.75, at ovens. W. P. Snyder & Co. report the average price of basic iron from Valley furnaces in June as $26.57 against $28.056 for May, and of Bessemer at $28.50, against $30.10 in May.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being $1.77 per gross ton:

Basic	$25.50
Bessemer	27.50
Gray forge	26.00
No. 2 foundry	26.50
No. 3 foundry	26.00
Malleable	26.50
Low phosphorus, copper free	25.00

Ferroalloys.—Demands are almost entirely for single carloads, but prices hold steady in the lack of selling pressure. General quotation on ferromanganese is $125, seaboard or furnace, for either domestic or imported material, but we note one sale of 50 tons of the latter for August delivery at $120. Resale lots of 50 per cent ferrosilicon are coming on the market at less than quotations, but makers to date have not gone under $87.50, delivered, and some still are asking $90, though that price now is regarded as practically unobtainable. There is little interest in spiegeleisen or in Bessemer ferrosilicon and silvery iron in this district. Prices of the latter have not changed, but may be expected to follow the decline in pig iron. A resale offering of about 400 tons of English ferromanganese is available at $118 c.i.f. Baltimore. Prices are given on page 49.

Semi-Finished Steel.—Demand is very limited, as non-integrated manufacturers are well covered against their immediate requirements and as third quarter contracts are coming out rather slowly, it is evident that these interests expect to be able to do as well or better on prices a little later on. A number of users of wire rods have not yet placed their third quarter business, and this also is true of several makers of sheets. The first half of this month will be marked by a rather low rate of finishing mill operations; this is reflected in the demand and meanwhile the integrated manufacturers, expecting to keep their steel works going, will have steel which must be sold or piled. They want to sell, and accordingly it is easy to secure billets, sheet bars and slabs for early delivery at $42.50. An inquiry for a sizable tonnage of forging billets, against which $47.50 to $50 has been quoted, still is open. There is almost no open market demand for skelp, and while makers are holding to 2.45c., that figure finds little actual basis in sales. Prices are given on page 49.

Wire Products.—The market is quieter, even on nails and plain wire, which have enjoyed a more sustained demand than the other products under this heading. The Steel Corporation subsidiary is not a free seller yet, but buyers find it easier to get a place on its books than was the case recently. There also is some modification of the sales policy of independents, who hitherto have been entertaining new business only to the extent of completed orders. Stocks in consuming and distributing hands vary considerably, but average up to normal in most parts of the country. There are no intimations of any price concessions. Prices are given on page 48.

Steel Rails.—Users of light rails still are buying moderately, and while they do not get a lower price than 2.25c., base, for sections rolled from billets or standard rail crops, they do not have to go above that price. The move of the leading Eastern independent maker to set up an extra of $2 a ton over base for 110 to 130-lb. rails found no support from other makers, and the order has been rescinded. The price of standard rails, therefore, remains at $43 per gross ton for all weights.

We quote 25 to 45-lb. sections, rolled from new steel, 2.25c. base; rolled from old rails, 2.15c. to 2.20c. base; standard rails, $43 per gross ton mill for Bessemer and open-hearth sections.

Tubular Goods.—The fact that some makers of steel pipe now are in a position to make fairly prompt deliveries on line pipe is resulting in a number of orders for this class of goods. Most of the business is in small lots, but it helps the mill schedules, which were beginning to suffer in some cases from the light new buying. A Youngstown and a Pittsburgh mill will share with British and Canadian makers in a 250-mile gas line from Alberta, Can., recently placed by the Northwest Utilities Co., Toronto, Can. This line has been under consideration since before the war. About 25,000 tons is involved, about a third of which will be supplied by nearby mills. June orders and specifications for pipe, notably in merchant pipe, showed a gain over those for May, but remained below the shipments on old orders. The general situation is easier as to delivery promises, but not with regard to prices. In fact, one mill is said to be asking a premium of $2 a ton for quick shipment of standard pipe. Discounts are given on page 48.

Sheets.—Current business is light, although there continues to be a good deal of pressure for deliveries upon the mills, which have taken contracts for the present quarter. This pressure is especially heavy from the automotive industry, which, contrary to expectations and predictions, has not yet slowed down appreciably, at least not so far as the makers of the popular cars are concerned. Suspension by independent sheet mills is general this week. Shutdowns run all the way from one to two weeks. It is figured that the drop in production will compensate for any loss of business and bring supply and demand more nearly in line than they were recently. The leading interest plans to shut down only for the holiday, but will lose more than a day's production, since the men are likely to absent themselves on the day or two afterward. Prices show no particular change. They are given on page 48.

Tin Plate.—There is a demand of considerable proportions for material for shipment this month and next, but none of the mills seems interested, as production has been kept in check by labor and weather conditions and most manufacturers believe they will be fortunate to get out such tonnage as they already have for the current quarter. One early delivery inquiry is for 100,000 boxes, while another is for 500,000 boxes. The price, $5.50 per base box, is a fixture.

Bolts, Nuts and Rivets.—Pressure for shipments on old and low-priced orders is a good deal heavier than the new demands. Buyers are not satisfied that present prices will hold and accordingly are cautious. Prices and discounts are given on page 48.

Cold-Finished Steel Bars and Shafting.—Only by a considerable stretch of imagination could this product be called active; yet there is a very fair amount of business, usually for early and specified delivery, buyers showing little inclination to buy beyond their known requirements. Contracts for third quarter tonnages have been fairly well up to the second quarter average, but buyers in few cases are specifying beyond the present month. An Eastern maker is reported to be taking business at 3.15c. base, Pittsburgh, but mills in this territory are adhering to 3.25c. base. Ground shafting is unchanged at 3.65c. base, f.o.b. mill, carload lots.

Hot-Rolled Flats.—Most makers of hoops and bands have sufficient business to be rather disinterested in more except at full prices. The few not thus situated, however, find it difficult to secure orders except by making attractive prices, and they are reported to have gone as low at 3.05c., base, in their quest for business. The market for hot-rolled strips also is irregular, with some well filled up and holding firmly to 3.30c., base, but with others in need of orders and going as low as 3c., base, to get them. The monthly carrying charge of 1c. per bundle per month on cotton ties went on yesterday. It now develops that the Steel Corporation price on hoops and bands never has gone above $3.15, base, and that is its present quotation. It is not in a position, however, to take on business for early delivery. Prices are given on page 48.

Cold-Rolled Strips.—Specifications from the automotive industry are light at the moment, and general demand is not sufficient to fully engage capacity. The market still is quotable at 5c. to $5.25c., base, Pittsburgh, the lower price being that of the Steel Corporation, but which is being met by some independent mills.

Track Fastenings.—Eastern makers of small spikes are going as low as $3.50 base, 100 lb., to get orders for small railroad spikes, but local makers show a dis-

position to stock production rather than meet that price. Demand for this size of spike is very light, owing to the coal situation, which is so dull and depressed as to discourage full operations, to say nothing of fresh development work. Makers are well supplied with business in other products under this heading, and are not yet in need of more to the extent of being willing to cut prices. Quotations are given on page 49.

Iron and Steel Bars.—Current demands for steel bars are moderate, because consumers are getting such good deliveries against old orders, and these generally at well below today's prices. The Steel Corporation still is far behind its orders and unable to make very prompt shipments against new business, but this is not the condition of the independents, some of whom can ship in two or three weeks and on orders for a single size of bar, have been known to make deliveries within a week. There is little sign of forward buying; indeed, on such business as is coming out, the steel is for a specific requirement and for delivery on a specified date. Too many makers are open for such business for buyers to be obliged to pay a premium for such service. The top and bottom on the market is 2.40c., base, Pittsburgh. With the extra of 15c. per 100 lb. for cold-finishing quality bars, makers of cold-finished bars claim that screw stock quality rods are cheaper by $1 per ton. The leading interest, besides imposing an extra $3 per ton for hot-rolled bars for cold finishing, also has issued a new card of extras for size, cutting, etc., materially advancing these extras over the old card, the new list being dated July 1. No change is noted in iron bar prices.

We quote soft steel bars, rolled from billets, at 2.40c., base; bars for cold-finishing of screw stock analysis, $3 per ton over base; reinforcing bars, rolled from billets, 2.40c. base; refined iron bars, 3.25c. base, in carload lots or more f.o.b. Pittsburgh.

Structural Material.—Prices are pretty solidly maintained at 2.50c. base, Pittsburgh, by local mills. The only change in the situation as compared with a month or so back is that this price carries a better delivery than it did then, although local mills claim to have several weeks' business in sight. New demands are moderate, probably because the mills now are delivering fairly well against old and low-priced business. It is claimed that low-priced material must be available, since recent bids on fabricated jobs have indicated that the plain material has been figured in at well below today's prices. Prices are given on page 48.

Plates.—Tank builders are showing a lively interest in small tonnage for early delivery; they are figuring on a number of oil storage tanks, need for which has developed as a result of the decline in crude oil prices. A number of sales running from 300 to 1000 tons have been made to these interests at the regular market base of 2.50c., Pittsburgh; this price has been paid readily enough, but with the proviso that delivery should be made in three to four weeks. The Steel Corporation is not catching up with its obligations to be able to promise this kind of delivery. Prices are given on page 48.

Coke and Coal.—Prices of contract furnace coke have receded further since a week ago, with business for third quarter having been done in the week under review at $5 per net ton, at ovens, and even $4.75. Operators have pretty well abandoned the $5.25 price and are now seeking $5; in view of business at a lower price, that figure really is a negotiation price. Spot furnace coke still takes a range of $4.75 to $5; the market is a little stronger in this direction, due to the fact that makers of inferior grades, who have been creating much competition, have largely withdrawn from the market. Spot foundry coke is quoted from $5.50 to $6 and on last half contracts about $1 higher. The coal market still is weak, with mine run steam coal readily obtainable at $1.75 to $2 per net ton at mines and gas and coking coal mine run grade, at $2.25. Slack grade has stiffened slightly in price, steam slack now being priced at $1.15 to $1.25 and gas slack at $1.40 to $1.50.

Old Material.—Downward tendency of prices still is unchecked. Such mill buying as is noted is for very small tonnages, and there are so many dealers with material they must move that the prices are almost wholly in buyers' favor. Bids on turnings and borings are extremely low, and consumers are not badly enough in need of supplies to respond to efforts of dealers to get even 25c. a ton more. We note a sale of 500 tons of machine shop turnings to a Pittsburgh district dealer at $12, delivered, but this price is below the real market, which at present is around $14.50 to $15. It is believed that the tonnage at the lower price was shipped without an order, and $12 was the best price that could be obtained to get a mill to take it in. This class of material is readily obtainable at $15, and probably can be bought at $14.50. Sales of heavy melting steel made during the week were at $20 to $20.50, but it is doubtful whether even the lower price now could be obtained, and some dealers are expressing a willingness to take on business as low as $19. Most recent sales of compressed sheets to mills have been at $19, but the anxiety among dealers for orders since has resulted in a quotation as low as $18. Pennsylvania Railroad scrap list again for July aggregates close to 50,000 tons; other railroad lists are expected to be heavy and a further drop in prices is forecast.

We quote for delivery to consumers' mill in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows:

Per Gross Ton	
Heavy melting steel	$20.00 to $20.50
No. 1 cast, cupola size	22.50 to 23.00
Rails for rolling, Newark and Cambridge, Ohio; Cumberland, Md.; Huntington, W. Va., and Franklin, Pa.	20.00 to 21.00
Compressed sheet steel	18.50 to 19.00
Bundled sheet sides and ends	16.50 to 17.00
Railroad knuckles and couplers	22.00 to 22.50
Railroad coil and leaf springs	22.00 to 22.50
Low phosphorus standard bloom and billet ends	24.00 to 24.50
Low phosphorus plates and other grades	23.00 to 23.50
Railroad malleable	22.00 to 22.50
Steel car axles	22.50 to 23.00
Cast iron wheels	20.50 to 21.00
Rolled steel wheels	22.00 to 22.50
Machine shop turnings	14.50 to 15.00
Heavy steel axle turnings	16.00 to 16.50
Short shoveling turnings	16.00 to 16.50
Cast iron borings	16.00 to 16.50
Heavy breakable cast	18.00 to 18.50
Stove plate	15.00 to 15.50
Sheet bar crop ends	22.00 to 23.00
No. 1 railroad wrought	16.00 to 16.50

Labor Conditions in Pennsylvania—Students Working in Mills

HARRISBURG, PA., July 2.—The semi-monthly report of the employment division of the Pennsylvania State Department of Labor and Industry for the first half of June is authority for the statement that several hundred students have been placed in semi-skilled and unskilled positions in iron and steel mills of the Harrisburg district to help relieve the shortages therein. These youths were placed through the department's junior employment plan. The shortage of mechanics is reported to be less serious than the shortage of mill workers, who are declared to be leaving the trades because of objections to 12-hr. days.

The Philadelphia district reports that a ship building firm of that section is experimenting with Chinese laborers as rivet heaters. Automobile mechanics are reported to be particularly scarce.

Scranton reports that the settlement of the strike in the Ashley shops of the Central Railroad of New Jersey has resulted in about 400 men returning to work. This is said to have relieved the situation materially in Wilkes-Barre, but conditions remain unchanged in Scranton.

The demand for workmen, particularly those of the skilled classes, is reported to be increasing steadily. In several instances district offices report production is being handicapped because of the shortage of workers, both of the skilled and unskilled class. Erie reports a slight decrease in the number of iron and steel workers for the first half of June. The decrease is said to be scarcely noticeable and is believed to be only a temporary situation, for the demand for workers of all classes continues strong.

Chicago

Contracts for Oil Tanks Feature the Market—Pig Iron Declines

CHICAGO, July 3.—Heavy purchases of oil storage tanks are the center of interest in an otherwise featureless market. Lettings reported here involve a total of 11,400 tons of plates. Besides the orders mentioned in the plate paragraph, the Humble Pipe Line Co., Houston, Tex., has placed 10 80,000-bbl. tanks, requiring 3000 tons with the Chicago Bridge & Iron Works for erection at Navarro, Tex., and the Magnolia Petroleum Co. has evenly divided an order for 20 tanks, involving 4000 tons between the United Iron Works and the Petroleum Iron Works. The Humble company is understood to have awarded a total of 35 tanks, but the distribution outside of the 10 placed with the local fabricator has not been learned.

Notwithstanding the revival of tank demand, the finished steel market is essentially quiet and shipments from mills continue to exceed new bookings. Local prices on plates, shapes and soft steel bars remain firm and unchanged. Production is holding up well, but local mills will shut down over July 4. A bar iron mill has gone down for several days for repairs, but this is the only important interruption in output reported.

Pig Iron.—Local iron has taken the third consecutive drop of $1 a ton in as many weeks and is now quoted at $29, base, furnace. The market is quiet and weak and it is probable that an attractive tonnage could be placed at a still lower figure. Southern Foundry appears to have dropped definitely to $25, base, Birmingham. While a number of producers continue to quote $26 to $27, base, no sales are reported above $25. Inquiries are light and few sales have been made. A local buyer has closed for 3000 tons of malleable for last half delivery to a plant outside of this city, but located in the Chicago district. A Wisconsin melter has closed for 500 tons of foundry for second half shipment. A southern Michigan melter who asked for figures on 1000 tons of malleable for delivery from the middle of August over the remainder of the year has withdrawn from the market without buying. While resale offerings are not heavy, they are sufficiently numerous to affect prices adversely. This is particularly true of charcoal iron, which is reported to have been quoted at as low as $33.15, delivered, Chicago. Jackson County silvery has declined $1 a ton, and electrolytic material is moving at from $1 to $2 less. A Michigan melter who closed for 600 tons of 8 per cent silvery is understood to have bought electrolytic at a $2 concession. An Indiana melter is inquiring for 400 tons of charcoal and another user in the same State is in the market for a carload of low phosphorus. A northern Illinois plant is asking for figures on 600 to 900 tons of 2.75 to 3.25 per cent silicon, high phosphorus foundry, for last half shipment.

Quotations on Northern foundry high phosphorus malleable and basic irons are f.o.b. local furnace and do not include an average switching charge of 61c. per ton. Other prices are for iron delivered at consumers' yards or when so indicated, f.o.b. furnace other than local.

Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago	$36.65
Northern coke, No. 1, sil. 2.25 to 2.75	29.50
Northern coke, foundry No. 2, sil. 1.75 to 2.25	29.00
Malleable, not over 2.25 sil.	29.00
Basic	29.00
High phosphorus	29.00
Southern No. 2	31.01
Low phos., sil. 1 to 2 per cent, copper free	$36.00 to 37.00
Silvery, sil. 8 per cent (nominal)	43.29

Ferroalloys.—Ferromanganese is now available for last half shipment at $120, seaboard, but we note a sale of spot material at $2.50 higher.

We quote 80 per cent ferromanganese, $127.56 to 130.06 for all deliveries; 50 per cent ferrosilicon, $92.50, delivered; spiegeleisen, 18 to 22 per cent, $53.58, delivered.

Plates.—Tank buying continues to be the feature of an otherwise quiet market. The Sinclair Crude Oil Purchasing Co. has placed five 80,000-bbl. tanks for Oklahoma, involving 1500 tons, with the Graver Corporation. The Humphreys Oil & Gas Co. has awarded 20 55,000-bbl. tanks, requiring 2660 tons, for erection in Texas, to the Youngstown Boiler & Tank Co. The Cosden Co., Tulsa, Okla., has ordered two 55,000-bbl. tanks, involving 260 tons, from the Kansas City Structural Steel Co. Additional tank business is in prospect, particularly for the Powell field in Texas. Tank fabricators have placed with one local mill 5400 tons of plates for fourth quarter shipment and an additional lot of 500 tons for the same delivery is pending. Prices are firm and unchanged.

The mill quotation is 2.60c. to 2.80c., Chicago. Jobbers quote 3.30c. for plates out of stock.

Rails and Track Supplies.—The Nickel Plate is about to enter the market for an as yet undetermined tonnage of rails for 1924 delivery. Little new business in track fastenings has been booked, but attractive business is in prospect, including an inquiry for 5000 kegs of spikes and another lot of several thousand kegs of spikes and bolts which has not yet actually come up for figures. Great interest is manifested in rolled steel wheels, current inquiries from 12 roads totaling 10,000 wheels.

Standard Bessemer and open-hearth rails, $43; light rails, rolled steel, 2.25c., f.o.b. makers' mills.

Standard railroad spikes, 3.25c. mill; track bolts with square nuts, 4.25c. mill; iron tie plates, 2.85c. mill; steel tie plates, 2.60c., f.o.b. mill; angle bars, 2.75c., f.o.b. mill.

Jobbers quote standard spikes out of warehouse at 3.90c. base and track bolts, 4.90c. base.

Structural Material.—Outside of oil storage tank awards noted in the paragraph on plates, little activity has developed in the fabricating field during the week. Buyers continue to press the mills for deliveries against old commitments and there are notably few cancellations and suspensions. New orders, however, are light.

The mill quotation on plain material is 2.60c. to 2.70c., Chicago. Jobbers quote 3.30c. for plain material out of warehouse.

Bars.—While soft steel bars continue to be the most active of the finished commodities, orders and inquiries are confined to relatively small tonnages and mill shipments still exceed bookings. The caution of buyers is attributed to the sustained weakness of the stock market. Local mill prices are firm, but it is reported that concessions have been made from the Pittsburgh base price of 2.40c. Bar iron continues quiet, with little business of consequence moving at over 2.50c. mill, Rail steel bars are firm and in fairly good demand.

Mill prices are: Mild steel bars, 2.50c. to 2.60c., Chicago; common bar iron, 2.50c. to 2.60c., Chicago; rail steel, 2.30c., Chicago mill.

Jobbers quote 3.20c. for steel bars out of warehouse. The warehouse quotation on cold-rolled steel bars and shafting is 4.55c. for rounds and 5.05c. for flats, squares and hexagons.

Jobbers quote hard and medium deformed steel bars at 3.15c. base; hoops, 4.55c.; bands, 3.95c.

Sheets.—The attitude of mills is firmer and concessions have practically disappeared. New business is light, however. Cooler weather during the past week has enabled local producers to operate on a slightly improved scale.

Mill quotations are 3.85c. for No. 28 black, 3c. for No. 10 blue annealed and 5c. for No. 28 galvanized, all being Pittsburgh prices, subject to a freight rate to Chicago of 34c. per 100 lb.

Jobbers quote f.o.b. Chicago, 4.35c. for blue annealed, 5.20c. for black and 6.35c. for galvanized.

Cast-Iron Pipe.—Inquiries are light, but awards for the week involve a fair total. The Lynchburg Foundry Co. will furnish 800 tons for Mount Greenwood, Ill. The National Cast Iron Pipe Co. will supply 450 tons for Gridley, Ill., 200 tons for Arlington Heights, Ill., and 100 tons for Frankfort, Ind. Alliance, Ohio, has awarded 200 tons to America Cast Iron Pipe Co.

We quote per net ton, f.o.b. Chicago, as follows: Water pipe, 4-in., $64.20; 6-in. to 12-in., $60.20; above 12-in., $58.20 to $59.20; class A and gas pipe, $5 extra.

Wire Products.—New business continues to come from manufacturing users in good volume, but demand from jobbers, particularly those in agricultural sections, has declined sharply. Pressure for shipments of wire nails is still heavy, indicating sustained activity in the building industry. There is a steady increase in

orders for woven wire fence, which is sold on future dating. Prices are steady, although there are unverified reports of shading by a small Ohio river producer. For mill prices, see Finished Iron & Steel, f.o.b. Pittsburgh, page 48.

We quote warehouse prices f.o.b. Chicago: No. 6 to No. 9 bright basic wire, $3.90 per 100 lb.; extra for black annealed wire, 15c. per 100 lb.; common wire nails, $3.95 per 100 lb.; cement coated nails, $3.25 per keg.

Bolts and Nuts.—Orders and specifications are exceedingly light and here and there prices are being shaded. The discounts generally observed are those shown on page 48 except that for delivery in this territory they are f.o.b. Chicago.

Jobbers quote structural rivets, 4c.; boiler rivets, 4.10c.; machine bolts up to ⅞ x 4 in., 45 and 5 per cent off; larger sizes, 45 and 5 off; carriage bolts up to ⅝ x 6 in., 40 and 5 off; larger sizes, 40 and 5 off; hot pressed nuts, squares and hexagons, tapped, $2.50 off; blank nuts, $2.50 off; coach or lag screws, gimlet points, square heads, 50 and 5 per cent off.

Reinforcing Bars.—Tonnage placed during the week forms a fair aggregate, although falling behind the recent average. Much of the business now developing is railroad and highway work, and in view of that fact the postponement of considerable road construction is a source of some concern. Prices are fairly well maintained, although concessions continue to be made on attractive jobs. Lettings include:

Northern Pacific Railroad, Phalen Creed sewer, St. Paul, Minn., 500 tons to Kalman Steel Co.

Chicago & North Western Railroad, third quarter requirements, 500 tons to Truscon Steel Co.

Chicago, Milwaukee & St. Paul, office building, Southport Avenue, Chicago, 150 tons to Corrugated Bar Co.

Illinois highway work, 110 tons to Kalman Steel Co.

Underwriters Laboratories, Building No. 6, Chicago, 165 tons to Barton Spiderweb System Co.

Great Northern Railroad, 110 tons to Concrete Steel Co.

School building, Dubuque, Iowa, 100 tons to Kalman Steel Co.

Covenant Club building, Chicago, 100 tons to Truscon Steel Co.

Stockman's Bank & Trust Co. building, Chicago, 100 tons to Concrete Steel Co.

Gimbel Bros.' store addition, Milwaukee, 100 tons to Concrete Steel Co.

Science Hall for Marquette University, Milwaukee, 156 tons to Corrugated Bar Co.

Office building for Delmic Realty Co., Milwaukee, 120 tons to Concrete Engineering Co.

Theater building for Jeffris Estate, Janesville, Wis., 100 tons to Concrete Engineering Co.

Pending work includes:

Stewart-Warner Speedometer Corporation, plant addition, Chicago, 700 tons.

Second unit of Pittsburgh Plate Glass Co. plant at Milwaukee, 300 tons. Bids in.

Apartment hotel building, 840 Sheridan Road, Chicago, for Edelson & Pavlin, 165 tons.

Pennsylvania Railroad, foundations for subways, Garfield Avenue and Fifty-sixth Street, Chicago, 150 tons.

Chicago Union Station, headhouse and concourse, 250 tons, general contract awarded to John Griffiths & Son Co.

Fair Store addition, Chicago, 700 tons.

Coke.—By-product foundry coke has been reduced to $13.50, delivered, Chicago switching district, and $14.25, delivered to Milwaukee consumers. Beehive foundry coke is still weak and one large local melter has closed for 10 carloads from Connellsville.

Old Material.—Buying by dealers who had contracts to fill before the expiration of the month was a sustaining influence during the week, but the general tendency of the market continues in a downward direction. There has been little consumer buying, although a steel works whose specifications for heavy melting are not so rigid as those of other mills, bought 4000 tons at $17 per gross ton. At the same time, dealers paid as high as $18 to fill orders taken at higher prices. By far the largest consumer of heavy melting and allied grades has cancelled all overdue orders regardless of price. This action is interpreted as indicating that the mill is well supplied with raw material by its own blast furnaces and will use much less scrap than it purchased during the early months of the year. With this interest out of the market, Chicago prices may drop to a lower level in relation to those of other centers than has been the case for some time, owing to the necessity for the Western supply of scrap to find an outlet. Railroad offerings include the Pennsylvania, Southwestern Region, 7000 tons; Pennsylvania, Northwestern Region, 2300 tons; Chicago & Alton, 1500 tons and the New York Central, a blind list.

We quote delivery in consumers' yards, Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton	
Iron rails	$22.00 to $22.50
Cast iron car wheels	21.00 to 21.50
Relaying rails, 56 and 60 lb.	28.50 to 29.50
Relaying rails, 65 lb. and heavier	32.00 to 35.00
Rolled or forged steel car wheels	21.00 to 21.50
Rails for rolling	18.00 to 18.50
Steel rails, less than 3 ft.	19.50 to 20.00
Heavy melting steel	17.50 to 18.00
Frogs, switches and guards cut apart	17.25 to 17.75
Shoveling steel	17.00 to 17.50
Drop forge flashings	12.50 to 13.00
Hydraulic compressed sheets	15.50 to 16.00
Axle turnings	15.00 to 15.50
Per Net Ton	
Iron angle and splice bars	23.00 to 23.50
Steel angle bars	16.00 to 16.50
Iron arch bars and transoms	22.50 to 23.00
Iron car axles	26.00 to 26.50
Steel car axles	20.00 to 20.50
No. 1 busheling	14.00 to 14.50
No. 2 busheling	11.50 to 12.00
Cut forge	15.00 to 15.50
Pipes and flues	11.50 to 12.00
No. 1 railroad wrought	15.00 to 15.50
No. 2 railroad wrought	15.00 to 15.50
Steel knuckles and couplers	19.00 to 19.50
Coil springs	20.50 to 21.00
No. 1 machinery cast	21.50 to 22.00
No. 1 railroad cast	19.75 to 20.25
No. 1 agricultural cast	19.75 to 20.25
Low phos. punchings	17.00 to 17.50
Locomotive tires, smooth	16.00 to 16.50
Machine shop turnings	10.00 to 10.50
Cast borings	12.50 to 13.00
Short shoveling turnings	12.50 to 13.00
Stove plate	15.00 to 15.50
Grate bars	13.50 to 14.00
Brake shoes	14.50 to 15.00
Railroad malleable	20.50 to 21.00
Agricultural malleable	20.00 to 20.50

Engineers Will Investigate Appointment of Non-Technical Man

WASHINGTON, July 2.—Protesting against the alleged policy of the change recently made by Secretary of the Interior Hubert Work in substituting a non-technical man for a technical man in the reclamation service, the Federated American Engineering Societies through Secretary L. W. Wallace has addressed a letter to the Secretary of the Interior asking reasons for the change. It was pointed out that the society would make an exhaustive investigation as a public service and as a matter of going on record as being opposed for all time against the alleged policy adopted by Secretary Work. This is one of the first great concerted moves ever taken by engineers of the country in an effort to prevent inroads on the technical service of the Government. The letter of Secretary Wallace relates to the appointment of former Gov. D. W. Davis of Idaho as director of the reclamation service in place of Arthur Powell Davis, described by the engineering societies as "an eminently successful employee for 35 years." The societies represent 50,000 engineers and technical experts who make up the 28 organizations affiliated with the Federated American Engineering Societies. It was declared that the appointment of non-technical men in connection with technical service of the Government may well endanger the whole national scheme of reclamation. Secretary Work has declared that the former director resigned, but friends of the latter claim the Secretary asked for his resignation.

The Bethlehem Steel Co. is moving its Philadelphia offices this week from the Morris Building to the Widener Building, occupying a part of the space occupied by the general sales offices of the Midvale Steel & Ordnance Co.

The Brady Foundry Co., Chicago, has been sold at auction to David Evans, president Chicago Steel Foundry Co. It is understood that Mr. Evans plans to resell the plant, having no intention of operating it.

Birmingham

Most Pig Iron Makers Quoting $27—Few Sales Made—Pipe Business Active

BIRMINGHAM, ALA., July 3.—At turn of the half year all but one iron maker were insisting on $27 for spot and third quarter iron. The one-stack maker offering iron at $25 was within very little of having sold capacity for third quarter, being credited with a total of 15,000 to 18,000 tons of recent bookings, which, added to what was already on books, is understood to have placed him in the same position statistically as the other makers. No furnace now has much third quarter iron to offer and two have none. Sales at $27 were larger last week, one maker booking over 2000 tons, with one lot of 700 tons. An inquiry for 800 tons for third quarter and one for like amount for fourth quarter were received and $27 quoted. There were no cancellations and some requests for anticipation of shipments. A feature of the week was shipment of 334 tons to Los Angeles, 983 to Oakland and 100 to Seattle. Little or none is being taken north.

We quote per gross ton f.o.b. Birmingham district furnaces as follows:

Foundry, silicon 1.75 to 2.25	$25.00 to $27.00
Basic	26.00
Charcoal, warm blast	34.00

Cast Iron Pipe.—Pressure pipe makers enjoy a steady influx of business, adding to their swamped condition. The base remains at $49. The National Cast Iron Pipe Co. is expected to commence making de Lavaud pipe in its new plant next month. The Pacific Coast takes large quantities steadily. The sanitary pipe market is nominally at $70, with fair business coming in.

Finishing Mills.—Japan took 3000 tons of rails via Mobile last week. The Illinois Central order of 60,000 tons of rails for itself and the Central of Georgia is expected to be filled for the greater part by the Tennessee company. New wire mill business is easing down except as to bars and nails. Bars are quoted 2.70c. f.o.b. Birmingham.

Coal and Coke.—Coke is bringing $8 on contracts and $8.50 to $9 for spot.

Old Material.—Deliveries on old business are heavy, but new business in steel scrap is light. Prices are "wobbly," but no real marking down has been done.

We quote per gross ton f.o.b. Birmingham district yards as follows:

Old steel rails	$18.00 to $20.00
No. 1 steel	16.00 to 18.00
No. 1 cast	23.00 to 24.00
Car wheels	23.00 to 24.00
Tramcar wheels	22.00 to 23.00
Stove plate	17.00 to 18.00
Cast iron borings	12.00 to 13.00
Machine shop turnings	12.00 to 13.00

Buffalo

More Inquiries for Pig Iron, but Very Few Transactions Are Recorded

BUFFALO, July 3.—A greater number of inquiries, without any marked change in the placement of tonnage, sums up the present situation. Several desirable inquiries are out; the Gould Coupler Co. inquiry put out last week calls for monthly deliveries of 500 tons and is for basic and malleable iron. An inquiry for 500 tons and another for 250 tons of foundry, for New York and New England delivery, are noted. All interests in position to quote are uniformly asking $27 for silicon 1.75 to 2.25 and $27.50 for silicon 2.25 to 2.75. A number of melters are closing for the week and because of the labor situation curtailment in melting in several foundries has been unusual. Sellers continue to find considerable iron being carried over from second quarter and in a few cases these tonnages will be sufficient for all of July melting and part of August.

We quote f.o.b. per gross ton Buffalo as follows:

No. 1 foundry, 2.75 to 3.25 sil.	$28.00
No. 2X foundry, 2.25 to 2.75 sil.	27.50
No. 2 plain, 1.75 to 2.25 sil.	27.00
Basic	26.50
Malleable	26.50
Lake Superior charcoal	36.78

Finished Iron and Steel.—Bar buyers have been more active and other products, which have been in good demand throughout the latest period of quietness, continue to be sought in much the same brisk way. Sheet demand has been rather irregular and while prices hold firm, a number of consumers have not placed business up to expectations. Rumors of weakness in black sheets have disappeared and the ruling price is 3.85c. Sales of 3.75c. may have been made, but the instances are few. The 2.40c. price on bars is uniform. Canvass of some of the larger users does not reveal any weakening nor is any expected. While more business has been placed, none is for anything more than actual needs and no forward buying has developed. Pipe allotments are still in effect.

We quote warehouse prices, Buffalo, as follows: Structural shapes, 3.65c.; plates, 3.65c.; soft steel bars, 3.55c.; hoops, 4.65c.; bands, 4.35c.; blue annealed sheets, No. 10 gage, 4.45c.; galvanized steel sheets, No. 28 gage, 6.35c.; black sheets, No. 28 gage, 5.25c.; cold rolled round shafting, 4.70c.

Old Material.—Two large consumers of heavy melting steel are expected in the market and in view of the present weakness will probably hold out for especially advantageous prices. No. 1 machinery cast scrap is especially weak because of the dull situation in pig iron. The entire market is lifeless, but July railroad lists may stimulate activity.

We quote f.o.b. gross ton Buffalo as follows:

Heavy melting steel	$20.50 to $21.50
Low phos., 0.04 and under	25.00 to 26.00
No. 1 railroad wrought	19.00 to 20.00
Car wheels	21.00 to 22.00
Machine and shop turnings	14.00 to 15.00
Cast iron borings	17.00 to 18.00
No. 1 busheling	18.00 to 19.00
Stove plate	18.00 to 19.00
Grate bars	17.00 to 18.00
Bundled sheet stampings	15.00 to 16.00
No. 1 machinery cast	23.00 to 24.00
Hydraulic compressed	18.50 to 19.50
Railroad malleable	24.00 to 25.00

Boston

Disregard of Pig Iron Differentials Shown the Past Week

BOSTON, July 2.—Scattered inquiries for pig iron in this territory the past week, ranging from car lots to 650 tons and in the aggregate amounting to approximately 2000 tons, resulted in a general disregard of differentials by furnaces and their representatives making quotations. This policy served to check rather than stimulate buying, consequently actual sales were the smallest for any weekly period this year. Eastern Pennsylvania iron, silicon 2.25 to 2.75, was offered at $28 furnace or $31.65 delivered, and silicon 3.25 to 3.75 at the same delivered price. Buffalo interests offered the same grades of iron at $28 furnace. Virginia silicon 3.25 to 3.75 was offered at $33.42 and $33.92 delivered, or 51c. a ton more than Buffalo delivered.

We quote delivered prices on the basis of the latest reported sales as follows, having added $3.65 freight from eastern Pennsylvania, $4.91 from Buffalo, $5.92 from Virginia, and $9.60 from Alabama:

East. Penn., sil. 2.25 to 2.75	$31.65 to $33.65
East. Penn., sil. 1.75 to 2.25	31.65 to 32.65
Buffalo, sil. 2.25 to 2.75	32.91 to 33.91
Buffalo, sil. 1.75 to 2.25	32.91 to 33.91
Virginia, sil. 2.25 to 2.75	33.42 to 34.42
Virginia, sil. 1.75 to 2.25	33.42 to 33.92
Alabama, sil. 2.25 to 2.75	35.10 to 37.10
Alabama, sil. 1.75 to 2.25	34.60 to 36.60

Warehouse Business.—No material decrease in the number of orders received daily by warehouses is reported, but the tonnage involved in the average individual order is smaller than a month ago and considerably so when contrast is made with April records. Warehouse stocks as a rule are well balanced, yet not excessive, as is attested by recent orders placed with mills for bars, shapes, plates, sheets and tin plate for

third quarter delivery. Stocks of wire nails are larger than noted before this year. Some sizes are still short, however. Of all warehouse products, bolts and nuts appear to be the least active.

Coke.—The New England Coal & Coke Co., followed by the Providence Gas Co., has reduced by-product foundry coke 50c. a ton to $13.50 delivered within the $3.10 freight rate zone. The market for such fuel is now $2.50 a ton below the 1923 peak price and on the same basis as a year ago. Large consumers of foundry coke have begun to order more freely for stocking purposes. A still further increase in the movement from ovens to consumer is expected this month, inasmuch as many foundries will have taken inventories as of June 30. The demand for domestic coke also is on the mend, consequently New England ovens presumably will continue to operate on their present production scale throughout the summer.

Old Material.—Business in old material has dwindled to small proportions. The practice of Pennsylvania mills of rejecting a large percentage of everything shipped out of New England in a measure accounts for the inactivity of the market here. Chemical borings possibly led in activity the past week. Car lots were purchased at prices running as high as $15.75 shipping point. Some activity is noted in No. 1 machinery cast, dealers paying around 90c. per 100 lb. on cars. Brokers are bidding $11 on cars for mixed borings and turnings, but holders apparently are not anxious to let go at that figure. Practically all heavy melting steel bought was applied to old contracts and involved only a few hundred tons.

The following prices are for gross ton lots delivered consuming points:

No. 1 machinery cast	$23.50 to $24.50
No. 2 machinery cast	21.50 to 22.50
Stove plate	13.00 to 14.00
Railroad malleable	25.00 to 25.50
Street car wheels	23.00 to 24.00

The following prices are offered per gross ton lots f.o.b. Boston rate shipping points:

No. 1 heavy melting steel	$14.00 to $14.50
No. 1 railroad wrought	15.00 to 15.50
No. 1 yard wrought	13.00 to 13.50
Wrought pipe (1 in. in diam., over 2 ft. long)	10.50 to 11.00
Machine shop turnings	11.00 to 11.50
Cast iron borings, rolling mill	11.50 to 12.50
Cast iron borings, chemical	14.50 to 15.75
Blast furnace borings and turnings	11.00 to 11.25
Forged scrap and bundled skeleton	11.00 to 11.50
Shafting	19.00 to 20.00
Street car axles	19.00 to 20.00
Rails for rerolling	15.50 to 16.00

St. Louis

Pig Iron Melters Not Interested—Coke and Old Material Weak

ST. LOUIS, July 3.—The end of the last half of the year finds the pig iron market easy, with melters showing no interest in their future requirements. A few orders were placed during the week, one for 300 tons, the remainder mostly for carloads. Some Southern iron is still being sold at $25, Birmingham, but the larger furnaces are still quoting $27. Stocks in hands of the furnaces in the Birmingham district are said to be the lowest they have ever been, one authority placing them at 30,000 tons for the 28 furnaces. The biggest factor in the Chicago market has made a price of $29 there for Northern iron, and there have been persistent, authoritative reports of sales being made as low as $28, Chicago, to points outside of that industrial district.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices $2.16 freight from Chicago, $3.28 from Birmingham (rail and water), $5.17 from Birmingham, all rail, and 81 cents average switching charge from Granite City:

Northern fdy., sil. 1.75 to 2.25	$31.16
Northern malleable, sil. 1.75 to 2.25	31.16
Basic	31.16
Southern fdy., sil. 1.75 to 2.25	30.17

Finished Iron and Steel.—Railroads continue to send out inquiries covering their requirements for last half, which are principally for forgings. The Missouri Pacific Railroad wheel requirements for that period will be 1500 wheels, and a St. Louis car builder has asked for prices on 150 axles for cars for a Los Angeles street car company. The Mississippi River & Bonne Terre Railroad is in the market for a small quantity of structural shapes and bars. A few inquiries have come from the railway supply companies. Fabricators are still well supplied with structural steel. Jobbers are buying hardly anything.

For stock out of warehouse we quote: Soft steel bars, 3.35c. per lb.; iron bars, 3.35c.; structural shapes, 3.45c.; tank plates, 3.45c.; No. 10 blue annealed sheets, 4.45c.; No. 28 black sheets, cold rolled, one pass, 5.20c.; cold drawn rounds, shafting and screw stock, 4.45c.; structural rivets, 4.15c.; boiler rivets, 4.25c.; tank rivets, ⅞ in. and smaller, 50-5 per cent off list; machine bolts, 45-5 per cent; carriage bolts, 40-5 per cent; lag screws, 50-5 per cent; hot pressed nuts, square or hexagon blank, $2.50; and tapped, $2.50 off list.

Coke.—Heavy offerings of Connellsville coke in this market have had a tendency to ease up the market. Some sales have been reported as low as $4.50 on lower grades, while standard grades have sold from $6.25 to $7.50. Contracts have been made for delivery at from $7 to $7.50.

Old Material.—The market for old materials is marked by the heavy offerings of railroads, which is helping to keep the market weak and prices down. Because of the weak market, the Chicago, Burlington & Quincy and Wabash railroads withdrew their lists. But other lines had heavy lists out, the largest being the Pennsylvania System, as follows; Central region, 14,000 tons, including 1981 tons of rails; lines west of Pittsburgh, 6900 tons, including 1350 tons of wheels, and the Chicago division, 2500 tons. The Chicago, Milwaukee & St. Paul list has 1500 tons; United Railways of St. Louis, 1000 tons, and the Southern Railway 60 scrap locomotives. Consumers are interested only in occasional bargains.

We quote dealers' prices f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

Per Gross Ton

Iron rails	$19.00 to $19.50
Rails for rolling	17.50 to 18.00
Steel rails, less than 3 ft.	18.00 to 18.50
Relaying rails, 60 lb. and under	26.00 to 27.00
Relaying rails, 70 lb. and over	33.50 to 34.50
Cast iron car wheels	19.00 to 19.50
Heavy melting steel	16.50 to 17.00
Heavy shoveling steel	16.50 to 17.00
Frogs, switches and guards cut apart	17.00 to 17.50

Per Net Ton

Heavy axles and tire turnings	12.75 to 13.25
Steel angle bars	15.25 to 15.75
Iron car axles	25.00 to 25.50
Steel car axles	19.00 to 19.50
Wrought iron bars and transoms	19.50 to 20.00
No. 1 railroad wrought	14.00 to 14.50
No. 2 railroad wrought	15.50 to 16.00
Railroad springs	19.00 to 19.50
Cast iron borings	12.50 to 13.00
No. 1 busheling	14.50 to 15.00
No. 1 railroad cast	17.00 to 17.25
No. 1 machinery cast	17.25 to 17.50
Railroad malleable	17.00 to 17.50
Machine shop turnings	11.50 to 12.00
Champion bundled sheets	9.50 to 10.00

Detroit Scrap Market

DETROIT, June 30.—The recent award by one of the largest producers in the district of approximately 3000 tons of turnings, flashings, heavy melting steel, borings and regular hydraulic compressed for July delivery developed the fact that dealers are showing less inclination to store tonnage, as there were only about two-thirds as many bidders as on the usual monthly lettings. Prices are materially the same as quoted a week ago with turnings and flashings registering a decline of 50c. per ton.

The following prices are quoted on a gross ton basis f.o.b. cars producers' yards, excepting stove plate, automobile and No. 1 machinery cast, which are quoted on a net ton basis:

Heavy melting steel	$15.00 to $17.00
Shoveling steel	15.00 to 17.00
No. 1 machinery cast	18.00 to 20.00
Cast borings	12.50 to 13.00
Automobile cast scrap	22.00 to 24.00
Stove plate	15.00 to 17.00
Hydraulic compressed	14.00 to 15.00
Turnings	10.00 to 11.00
Flashings	10.00 to 11.00

Cincinnati

Sales of Moderate Tonnages of Pig Iron Develop Lower Prices

CINCINNATI, July 3.—A number of fair-sized sales were reported last week, developing lower prices on Northern irons, but no change in Southern quotations. An Indiana melter is reported to have closed for 1000 tons at a shade lower than $27, Ironton, basis, and a Southern Ohio melter is credited with the purchase of 500 tons at about the same figure. A car company in the district bought 500 tons of Northern, and an automobile parts manufacturer 500 tons of Tennessee iron at $25.50, Birmingham. A number of other sales included carload lots up to 100 tons. There is no activity in Bessemer, basic or silveries. Inquiry is light, though sellers report that melters are more willing to discuss pig iron requirements than for many weeks past, indicating more interest is being shown as stocks on hand get lower. The L. & N. Railroad will close this week on 1000 tons of Southern, and an inquiry is current from an Indiana manufacturer for 1000 to 2000 tons for fourth quarter.

Based on freight rates of $4.05 from Birmingham and $2.27 from Ironton, we quote f.o.b. Cincinnati:

Southern coke, sil. 1.75 to 2.25 (base)	$29.05
Southern coke, sil. 2.25 to 2.75 (No. 2 soft)	29.55
Ohio silvery, 8 per cent	40.77
Southern Ohio coke, sil. 1.75 to 2.25 (No. 2)	29.27
Basic Northern	29.27
Malleable	29.27

Finished Material.—The market is going along in a very satisfactory way. While orders continue to be placed for small tonnages, some of the larger buyers have also contracted for third quarter, and specifications have been good. Plates, in particular, seem to be in demand for early shipment, though bars are also fairly active. Prices of the heavier products are being firmly maintained, and to date there have been no evidences of current prices being shaded. Some mills are quoting carload lots of bars at 2.45c., and making sales right along, but the generally accepted price is 2.40c., with 2.50c. for shapes and plates. Most of the larger buyers have covered their requirements of sheets for the third quarter, but fill-in tonnages are fairly numerous. More pipe buying is being done, probably due to the fact that mills can now make better delivery, and jobbers feel that it would pay them to lay in a stock while it is possible for them to do so, as pipe has been a very scarce article for many months past. There is little activity in wire products, as far as new business is concerned, but with most mills six to eight weeks behind on shipments, jobbers are pressing mills for deliveries. Nail prices seem to have become stabilized at $3.00 per keg, base, little more being heard of the $3.10 price for prompt delivery. No new inquiries have appeared for structural steel, and the only letting of importance was a warehouse at Indianapolis, 350 tons, to the Rochester Bridge Co.

Warehouse Business.—Some manufacturers apparently are having difficulty in getting shipments of steel bars, as local jobbers report a heavy demand out of stock. Business fell off during the past week, but this is attributed to the fact that many buyers were loath to place orders until their semi-annual inventory had been completed. Reinforcing bars are in good demand, as are sheets and plates. Prices are firmly maintained.

Cincinnati jobbers quote: Iron and steel bars, 3.50c.; reinforcing bars, 3.60c.; hoops, 4.55c.; bands, 4.25c.; shapes, 3.60c.; plates, 3.60c.; cold-rolled rounds, 4.50c.; cold-rolled flats, squares and hexagons, 5c.; No. 10 blue annealed sheets, 4.25c.; No. 28 black sheets, 5.35c.; No. 28 galvanized sheets, 6.35c.; No. 9 annealed wire, $3.60 per 100 lb.; common wire nails, $3.60 per keg base.

Coke.—There is little activity in the coke market and prices are still soft. Connellsville furnace coke is quoted at $5 for prompt shipment, and foundry at $5.50 up. New River coke can be had at $1 below last week's quotations from at least one operator. Wise County prices are unchanged.

Old Material.—There were a few small sales of borings and turnings reported, but otherwise the scrap market was very quiet, and undoubtedly lower prices than those quoted could be done. Railroad offerings are heavy. Some mills are holding up shipments.

We quote dealers' buying prices, f.o.b. cars Cincinnati:

Per Gross Ton		
Bundled sheets	$13.00 to	$13.50
Iron rails	15.50 to	16.00
Relaying rails, 50 lb. and up	28.00 to	28.50
Rails for rolling	17.00 to	17.50
Heavy melting steel	16.00 to	16.50
Steel rails for melting	15.00 to	15.50
Car wheels	16.00 to	16.50
Per Net Ton		
No. 1 railroad wrought	12.50 to	13.00
Cast borings	11.00 to	11.50
Steel turnings	10.00 to	10.50
Railroad cast	17.00 to	17.50
No. 1 machinery cast	20.50 to	21.00
Burnt scrap	13.00 to	13.50
Iron axles	23.00 to	23.50
Locomotive tires (smooth inside)	13.50 to	14.00
Pipes and flues	10.50 to	11.00

The Cincinnati office of THE IRON AGE has been moved from the Mercantile Library Building to Room 904, First National Bank Building.

New York

Pig Iron Weak and Dull—Price of By-Product Coke Reduced $1

NEW YORK, July 3.—Buying of the past week has been extremely light and prices are ragged. The largest tonnage reported closed was 500 tons of high silicon for third quarter delivery to a Connecticut melter. A number of inquiries ranging from 500 to 1000 tons, previously reported, have not been closed and the general attitude of buyers is one of waiting while the market sags. In eastern Pennsylvania the ordinary base is now $28, with No. 1 and No. 2X obtainable from some furnaces at the same price as No. 2 plain. It is understood that less than $28 can be done on No. 2 plain, but that on such sales the usual differentials are added for the high silicons. On Buffalo iron $28 is the maximum, with quotations ranging down to $27. On Virginia iron, prices are weaker and $27 could be done on a fair tonnage.

We quote delivered in the New York district as follows, having added to furnace prices $2.27 freight from eastern Pennsylvania, $4.91 from Buffalo and $5.44 from Virginia:

East. Pa. No. 1 fdy., sil. 2.75 to 3.25		30.27
East. Pa. No. 2X fdy., sil. 2.25 to 2.75		30.27
East. Pa. No. 2 fdy., sil. 1.75 to 2.25		30.27
Buffalo, sil. 1.75 to 2.25		31.91
No. 2X Virginia, sil. 2.25 to 2.75	$33.44 to	33.94
No. 2 Virginia, sil. 1.75 to 2.25	32.44 to	32.94

Cast-Iron Pipe.—Prices remain firm and deliveries are generally extended well up to fall. Foundries report continued difficulty with labor, owing to warm weather. Private purchases are frequent. We quote per net ton, f.o.b. New York, in carload lots, as follows: 6-in. and larger, $62.30; 4-in. and 5-in., $67.30; 3-in., $77.30, with $5 additional for Class A and gas pipe. A slight improvement is noted in soil pipe demand, although transactions are of limited size. Prices are becoming fairly well settled around the figure established by the recent decline of 5 points. One maker is reported to have marked a further decline of 5 points. We quote discounts of both Southern and Northern makers, f.o.b. New York, in carload lots, as follows: 6-in. standard, 18 to 20¾ per cent off list; heavy, 28 to 30¾ per cent off list.

Warehouse Business.—After discount is made for seasonal quietness, most warehouses agree that business is holding a good pace, even against the coming holiday. There has been considerable cutting in prices on sheets but the opinion expressed is that this is only a temporary condition. A few dealers felt a measurable falling off in sheet business, and in some quarters it is believed that orders may be taken wisely at 4.35c. on No. 18 soft black sheets. There are no changes in prices on any of the ferrous materials. Mill prices hold firm in spring and tool steel, but there seems to

be an underlying softness. Buying is hand-to-mouth and mills are pretty well booked. Export buying is gaining but competition in prices is sharp. Inquiries are fairly numerous and, although they are for small lots, this continues to be a fairly active product. Brass and copper warehouses have dropped brass sheet, wire and rods ¾c., and sheet copper from ½c. to ¾c. This reduction was in order since previous prices were based on higher priced copper. Price quotations appear on page 66.

Ferroalloys.—Demand for ferromanganese is exceedingly light and confined to small lots for early shipment. It is stated that some of these are being satisfied with resale metal at a concession of about $5 from the contract price of $120, seaboard. There is almost no contracting for last half, but there is still some alloy available at the quotation of $125, seaboard. Demand for spiegeleisen is also light, with quotations unchanged. The almost stagnant conditions also obtain in the 50 per cent ferrosilicon market where demand is confined to small lots for early delivery. The policy of waiting which has prevailed in these markets for some time is even more accentuated as the markets enter the last half.

Finished Iron and Steel.—In some quarters an increase in buying activity is noted, but in general the situation remains unchanged in that new inquiry, though more than usual for the season, is dull. It is not unusual to find a mill taking business equal to shipments. Shipments continue heavy and suspensions or cancellations are unheard of. Railroads are buying steel for maintenance work. The New York Central took bids today on 5000 tons of plates, shapes, bars and other form of steel for third quarter needs; 14 or 15 companies bid for part or the whole of the work and of course for different delivery points, but apparently the prices in every case accorded with the current market. Generally speaking, prices are firm, though concessions are being made in bolts of 60 and 10 per cent instead of 50 and 10 per cent, and bar iron is on a parity with steel bars and has been quoted at a 2.35c. Pittsburgh basis.

We quote for mill shipments, New York delivery, as follows: Soft steel bars, 2.74c. to 2.84c.; plates and structural shapes, 2.84c.; bar iron, 2.74c.

Old Material.—There is very little interest in the scrap market among either consumers or dealers. Beyond buying for orders in hand dealers are making no purchases, as there is no settled feeling that prices have yet reached bottom despite the steady decline during the past few months. It is to be expected that the larger dealers will begin accumulating stocks for speculative purposes as soon as prices have reached a point that is attractive to them, but there are no indications now that such a time has arrived. Dealers are paying about $13.50 to $14.00, f.o.b. cars, New York, for ordinary No. 1 melting steel for Pittsburgh and eastern Pennsylvania mills and about 50c. a ton higher for railroad steel. Other prices are about as they were a week ago.

Buying prices per gross ton, New York, follow:

Heavy melting steel, yard	$13.50 to $14.00
Steel rails, short lengths, or equivalent	14.00 to 14.50
Rails for rolling	16.00 to 18.00
Relaying rails, nominal	25.00 to 26.00
Steel car axles	20.00 to 21.00
Iron car axles	25.00 to 26.00
No. 1 railroad wrought	17.00 to 17.50
Wrought iron track	16.00 to 16.50
Forge fire	12.75 to 13.25
No. 1 yard wrought, long	15.50 to 16.00
Cast borings (clean)	12.75 to 13.25
Machine-shop turnings	12.00 to 12.50
Mixed borings and turnings	12.00 to 12.50
Iron and steel pipe (1 in. diam., not under 2 ft. long)	10.50 to 11.00
Stove plate	12.75 to 13.25
Locomotive grate bars	13.00 to 13.50
Malleable cast (railroad)	19.00 to 20.00
Cast-iron car wheels	18.00 to 19.00

Prices which dealers in New York and Brooklyn are quoting to local foundries per gross ton follow:

No. 1 machinery cast	$21.00 to $21.50
No. 1 heavy cast (columns, building materials, etc.), cupola size	20.00 to 20.50
No. 1 heavy cast, not cupola size	18.00 to 18.50
No. 2 cast (radiators, cast boilers, etc.)	16.00 to 16.50

Coke.—The price of by-product coke has been reduced $1 on foundry grades and is now quoted $11.34 and $11.41, Newark and Jersey City points. Standard foundry Connellsville coke for prompt shipment ranges from $5.50 to $6.25, ovens, and on contract, $6.75 to $7.50. Quotations on standard furnace range from $4.75 to $5.50 for prompt shipment. There is virtually no contracting.

Philadelphia

Foundry Pig Iron Declines $1—Less Strength in Some Finished Lines

PHILADELPHIA, July 3.—Foundry pig iron is down $1 a ton from the nominal quotations of a week ago; scrap is weak and lower; some finished steel products show less strength than a week or two ago, and there is an air of uncertainty at the beginning of the second half of the year as to what market and price developments will be. That the next two months will be uneventful seems to be a general conclusion, but there is a disposition in some quarters to believe that the early autumn will bring renewed activity.

There has been during the past month a greater degree of confidence in steel prices than in pig iron prices. The latter have definitely broken, but only sporadic cutting of finished steel products has developed, notably on structural shapes, which are available from one mill at 2.40c., Pittsburgh. Slight weakness has developed in bar iron, to the extent of about $1 a ton, while bolts, nuts and rivets are very weak and some makers will undoubtedly be obliged to revise third quarter contract figures to the basis now generally being quoted.

There will be partial shut-downs this week at some mills for repairs.

Ore.—Last week's receipts of iron ore at this port totaled 13,839 tons, of which 7289 tons came from Sweden and 6550 tons from Tunis. Five thousand tons of Brazilian manganese ore also arrived and 1500 tons of chrome ore from British India.

Semi-Finished Steel.—Quotations are at $42.50, Pittsburgh, for open-hearth rerolling billets, but Eastern mills seemingly are not ready to follow the minimum Pittsburgh price of $47.50 on forging billets.

Coke.—Blast furnace coke for prompt shipment is being quoted at $4.75 to $5, Connellsville, and on contract at $5.50, but not many contracts are being made. Foundry coke is to be had from $6 to $7.50, ovens, according to grade.

Ferroalloys.—Ferromanganese at $125, furnace or seaboard; spiegeleisen at $45, furnace, and 50 per cent ferrosilicon at $92, delivered, represent today's prices on principal alloys. Foreign ferrosilicon running a little under 50 per cent is to be had from $85 to $87.50, delivered.

Pig Iron.—Efforts to maintain a $29 base for foundry pig iron at eastern Pennsylvania furnaces have failed and the market is wide open, with no certainty as to what prices will be quoted on attractive inquiries, should any develop. The present level is $28, furnace, for No. 2 plain, with $1 differentials for higher silicon content, but it is feared that $1 differentials may not hold in view of the fact that Virginia and Buffalo furnaces are quoting 50c. differentials. The new prices are $1 down from those nominally quoted a week ago. The situation is viewed with misgivings by Eastern furnace interests, as no important share of the expected demand from consumers for third quarter iron has developed. One company with two large furnaces in blast, having about 35,000 tons of iron piled, will put out one of its furnaces probably within a week. Another company with two active furnaces is likely to let one of them go out soon, but has no definite plans. The volume of foundry iron business in the past week has been slightly greater than during the week previous, but it is by no means important enough to create optimism. A Virginia furnace company has authorized its agents to sell 7500 tons of iron for delivery at any time in second half at $27 base, furnace, with 50c. differentials, but it is intimated that in cases of mixed orders of two or more grades it is possible to obtain $27 quotations even on No. 2X and No. 1X. Foreign

iron is not being sold in appreciable tonnages, but it is a menace to Atlantic seaboard furnaces to the extent that it will keep Eastern iron at competitive levels. The only basic iron transaction of the week involved 2500 tons for early delivery. Basic is available at not more than $28, delivered. Gray forge is to be had at the same price. While foreign pig iron receipts are less frequent, 2000 tons came in last week from England.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia and include freight rates varying from 76 cents to $1.64 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	$28.76 to $29.64
East. Pa. No. 2X, 2.25 to 2.75 sil.	29.76 to 30.64
East. Pa. No. 1X	30.76 to 31.64
Virginia No. 2 plain, 1.75 to 2.25 sil.	32.17 to 32.67
Virginia No. 2X, 2.25 to 2.75 sil.	32.67 to 33.17
Basic delivered eastern Pa.	28.00
Gray forge	28.00 to 29.00
Malleable	30.14 to 30.64
Standard low phos. (f.o.b. furnace)	30.00 to 35.00
Copper bearing low phos. (f.o.b. furnace)	33.00

Foreign Pig Iron

All prices f.o.b. cars Philadelphia, duty paid.

Continental foundry, 1.80 to 2.50 sil.	$29.00
Continental foundry, 2.50 to 3.25 sil.	30.00
Low phos. copper free, guar. not over 0.035 per cent phos.	$35.00 to 36.00
Continental, phos. 1.50; sil. 2 to 3	29.50

Plates.—The plate market holds firm at 2.50c., Pittsburgh, for fairly large lots and 2.55c. and 2.60c., Pittsburgh, for small lots. Railroad and oil tank work constitutes the major part of current demand. The spurt of buying which started about the middle of June was not long maintained, but last week brought a fair volume of last-minute specifications on second quarter commitments, and most of the mills have four to six weeks' business ahead, one or two slightly more than that. The Baldwin Locomotive Works is specifying freely on old contracts but is taking no new tonnage, as it has received no locomotive orders for several weeks.

Structural Material.—Structural shapes are available in attractive lots at 2.40c., Pittsburgh, from an Eastern mill, but the general level of quotations is 2.50c. The only important new work in this locality consists of 1900 tons for anchorage cable bents for the Delaware River bridge, bids closing July 18.

Bars.—Steel bars are fairly firm at 2.40c., Pittsburgh. Demand is light, but there were good specifications last week on second quarter contracts. Bar iron is weak at 2.40c., Pittsburgh, and there are intimations that 2.35c. can be done. A shipment of 1000 tons of Swedish bar iron was received here last week.

Warehouse Business.—The volume of warehouse buying is steadily maintained. Prices are unchanged, and for local delivery are as follows:

Soft steel bars and small shapes, 3.55c.; iron bars (except bands), 3.55c.; round edge iron, 3.75c.; round edge steel, iron finished, 1½ x ½ in., 3.75c.; round edge steel planished, 4.55c.; tank steel plates, ¼ in. and heavier, 3.65c.; tank steel plates, ⅜ in., 3.95c.; blue annealed steel sheets, No. 10 gage, 4.25c.; black sheets, No. 28 gage, 5.15c.; galvanized sheets, No. 28 gage, 6.25c.; square twisted and deformed steel bars, 3.65c.; structural shapes, 3.65c.; diamond pattern plates, ¼-in., 5.40c.; ⅜-in., 5.60c.; spring steel, 5c.; round cold-rolled steel, 4.35c.; squares and hexagons, cold-rolled steel, 4.85c.; steel hoops, 1 in. and wider, No. 20 gage and heavier, 4.75c.; narrower than 1 in., all gages, 5.25c.; steel bands, No. 12 gage to ⅞-in., inclusive, 4.35c.; rails, 3.55c.; tool steel, 8.50c.; Norway iron, 7c.

Bolts, Nuts and Rivets.—Eastern makers of bolts, nuts and rivets are finding it difficult to keep pace with the rapid decline in prices. Third quarter contracts were made on the basis of 50 and 10 per cent off list for large machine bolts, but since then some makers have added another 10 per cent and even 60 and 10 per cent off list has been reported. It is expected that Eastern makers will revise some of their contracts to the new level of prices.

Sheets.—Though black sheets are being rather freely cut to 3.75c., Pittsburgh, it is stated that some orders are still being booked at 3.85c. Blue annealed are fairly firm at 3c. and galvanized at 5c.

Strip Steel.—Hot-rolled is maintained at 3.30c., Pittsburgh, but cold-rolled strips are not firm at 5.25c., this price being shaded $5 a ton in some quarters.

Old Material.—Lower prices are recorded this week on several grades of scrap. Mills and foundries continue to obtain sufficient supplies for their needs, and there is no indication of accumulation by either consumers or dealers. A ship arriving here last week brought 1320 tons of scrap from Cuba.

We quote for delivery at consuming points in this district as follows:

No. 1 heavy melting steel	$17.50 to $18.00
Scrap rails	17.50 to 18.00
Steel rails for rolling	20.00 to 21.00
No. 1 low phos., heavy 0.04 and under	24.00 to 25.00
Cast iron car wheels	22.00 to 23.00
No. 1 railroad wrought	21.00 to 22.00
No. 1 yard wrought	19.00 to 20.00
No. 1 forge fire	16.00 to 17.00
Bundled sheets (for steel works)	16.00 to 16.50
No. 1 busheling	17.50 to 18.50
Mixed borings and turnings (for blast furnace use)	15.00 to 16.00
Machine shop turnings (for steel works use)	15.50 to 16.00
Machine shop turnings (for rolling mill use)	16.00 to 16.50
Heavy axle turnings (or equivalent)	17.50 to 18.50
Cast borings (for steel works and rolling mills)	16.50 to 17.00
Cast borings (for chemical plants)	17.00 to 19.00
No. 1 cast	21.00 to 22.00
Heavy breakable cast (for steel plants)	18.00 to 19.00
Railroad grate bars	17.50 to 18.50
Stove plate (for steel plant use)	16.50 to 17.00
Railroad malleable	21.00 to 22.00
Wrought iron and soft steel pipes and tubes (new specifications)	14.50 to 15.50
Shafting	24.00 to 26.00
Steel axles	24.00 to 26.00

Cleveland

Purchase of 2500 Tons of Basic at Low Price —Ore Shipments Heavy

CLEVELAND, July 2.—Ore shipments during June showed a marked increase, amounting to 9,499,501 gross tons, making shipments for the season up to July 1 16,185,482 tons. With the expected curtailment in pig iron production there is an easing in the demand for ore and some consumers will not take as much as they had planned earlier in the season. Consequently operations at the Lake Superior mines are not being pushed to the extent that they were and the shortage that has existed in the supply of mining labor is less in evidence. The season's ore movement is not expected to exceed 55,000,000 tons as compared with an estimate of 60,000,000 tons earlier in the year.

Coke.—The demand for foundry coke for the third quarter and last half has become more active, the number of contracts being placed at $7 to $7.50 for the better grades. Standard Connellsville foundry coke is quoted at $6.25 to $6.50 for prompt shipment.

Pig Iron.—The market shows more activity than for several weeks, as consumers are getting nearer the time that they will need some additional iron, but sales are mostly in small lots and the aggregate tonnage booked is not large. Prices have further declined, particularly in the Cleveland district, and the market continues weak. Locally prices have been marked down to a point at which Valley competition appears to be shut out with present Valley prices. The purchase of 2500 tons of basic iron was made by a Sharon, Pa., consumer at $26, delivered, or $25.24, Valley furnace. An Indianapolis melter has purchased 1500 tons of malleable iron from a southern Ohio furnace at $26.75. We also note the purchase of 500 tons of malleable by a Cleveland melter from a local furnace at $27.25 at furnace. The Westinghouse Electric & Mfg. Co. is reported to have purchased 500 tons of foundry iron for its Cleveland plant at $28, furnace, for both No. 1 and No. 2X. Two

lake furnaces that are not meeting the low prices have reduced their quotations $1 a ton to $29. In Buffalo foundry iron is being quoted at $27.50. Several inquiries are pending in lots up to a few hundred tons. Shipping orders continue good and there appears to be no falling off in the demand from the automobile industry.

Quotations below, except on basic and low phosphorus iron, are delivered Cleveland, and for local iron include a 50c. switching charge. Ohio silvery and Southern iron prices are based on a $3.02 freight rate from Jackson and $6 rate from Birmingham:

Basic, Valley furnace	$25.25 to $25.50
Northern No. 2 fdy., sil. 1.75 to 2.25	27.50 to 28.00
Southern fdy., sil. 1.75 to 2.25	31.00 to 31.50
Malleable	29.77
Ohio silvery, 8 per cent	27.50 to 28.00
Standard low phos., Valley furnace	35.00

Alloy Steels.—Alloy steels have become slightly more active than they have been for several weeks, but prices are not firm and have declined ¼c. per lb. on some grades.

Semi-finished Steel.—With the reduced consumption, some customers are carrying over sheet bars purchased for the second quarter and are not expected to come in the market for a few weeks. There is practically no inquiry. The price appears to be well established at $42.50.

Sheets.—The Detroit automobile companies are buying automobile body sheets more freely, some for the third quarter and others for a shorter period. Generally the market is not active. Black sheets are still being shaded $1 a ton to 3.75c., but prices on blue annealed and galvanized sheets appear to be holding well.

Reinforcing Bars.—The demand is light. Prices are unchanged, with rail steel reinforcing bars quoted at 2.35c. for desirable orders and this could probably be shaded. A Pennsylvania freight house at Columbus, Ohio, will require 100 tons.

Bolts, Nuts and Rivets.—Bolt and nut manufacturers are closing considerable business in third quarter contracts. Rivet specifications are good and consumers generally are placing contracts at regular prices, which are firm.

Finished Iron and Steel.—A few buyers are attempting to bring out prices lower than 2.40c. for steel bars and 2.50c. for plates and structural material, but mills appear to be holding firmly to those prices. Local and Eastern mills are still getting 2.60c. for plates for early shipment. Specifications on contracts are good, but new demand is light. Deliveries show some improvement, particularly on some sizes of steel bars, but the labor shortage has become more acute because of the hot weather and some steel plants have been compelled to curtail production so that the improvement in deliveries is not as pronounced as it would be with a fair labor supply. Reports from the automobile industry in Detroit indicate that the manufacturers of low priced cars will keep up to maximum production at least through July, but some plants making high priced cars have curtailed operations. It is understood that the Ford Motor Co. has scheduled a production of 7040 cars per day for July and the Chevrolet company a production of 1700 cars. The Canton Car Co., Canton, Ohio, has taken car repair work for the Western Maryland Railroad, requiring 3000 tons of steel, including 1600 tons of plates and 1300 tons of shapes, which will probably go to a Pittsburgh district mill. The Lima Locomotive Co. has taken 10 locomotives for the Union Railroad, Pittsburgh, a Steel Corporation subsidiary. In the structural field, inquiry has improved somewhat.

Jobbers quote steel bars, 3.36c.; plates and structural shapes, 3.46c.; No. 9 galvanized wire, 3.70c.; No. 9 annealed wire, 3.25c.; No. 28 black sheets, 4.65c.; No. 28 galvanized sheets, 5.80c.; No. 10 blue annealed sheets, 3.75c. to 4.06c.; cold rolled rounds, 3.90c.; flats, squares and hexagons, 4.40c.; hoops and bands, 1 in. and wider and 20 gage or heavier, 4.16c.; narrower than 1 in. or lighter than No. 20 gage, 4.60c.

Old Material.—With market support lacking, prices have again sharply declined on several grades and the situation continues very weak. Prices have now reached a point at which yard dealers are buying considerable scrap to lay down. The sales of 1000 tons of heavy melting steel to a dealer are reported at $17 but today only $16 was being offered, or a decline of $2 a ton during the week. We note the sale of several hundred tons of compressed sheet steel by a Cleveland to a Valley dealer at $16.10 shipping point. Cast borings and turnings are $1 lower and busheling has declined about $2. Machine shop turnings are down to around $13 and sales at that price are reported in Detroit for Cleveland delivery. A few car lots of automobile scrap brought $23. The price decline has not stimulated buying by the mills. The Pennsylvania Railroad System, Central Division, will take bids July 5 for approximately 13,000 tons of scrap.

Heavy melting steel	$16.00 to $16.50
Rails for rolling, nominal	21.00 to 22.00
Rails under 3-ft	20.00 to 20.50
Low phosphorus melting	20.00 to 20.50
Cast borings	14.00 to 14.50
Machine shop turnings	13.00 to 13.50
Mixed borings and short turnings	13.00 to 13.50
Compressed sheet steel	16.00 to 16.10
Railroad wrought	14.50 to 15.00
Railroad malleable	22.00 to 23.00
Light bundle sheet stampings	12.75 to 13.00
Steel axle turnings, nominal	17.50 to 17.75
No. 1 cast	21.50 to 22.50
No. 1 busheling	13.00 to 13.50
Drop forge flashings	13.00 to 13.50
Railroad grate bars	15.00 to 15.50
Stove plate	16.00 to 16.50
Pipes and flues	12.50 to 12.75

STEEL STOCKS NEAR 1921 LOWS

Bethlehem Seven, Republic and Vanadium Four Points Above Previous Depression

Last week's drop in stock prices brought quotations on several active steel issues within a few points of the lows reached in the depression of 1921. Republic common at 44½ and vanadium at 28½ were both less than 4 points above their respective 1921 lows. The corresponding spread for Colorado Fuel & Iron common was 5½ and for Bethlehem common 6⅞ points. Replogle Steel at 14⅛ was almost 4 points below the bottom price of 1921 and is now more than 50 per cent below the figure of last March.

In the following table appear quotations on steel companies' common stock at their low point during their 1921 depression, at their highest prices since and at the lowest prices reached in last Tuesday's reaction.

	1921 Low	High Since	Tuesday's Low
U. S. Steel	70¼	111½	90⅝
Bethlehem	41½	82¼	48⅝
Republic	41⅛	78⅝	44½
Crucible	49	98⅝	64½
Sloss-Sheffield	32⅛	60	42¼
Colorado Fuel & Iron	22	37	27½
Replogle Steel	18	38½	14⅛
Gulf States Steel	25	104⅝	70⅝
United Alloy	19	41¼	31½
Vanadium	25⅛	53⅜	28½

These recessions and the high prices of 1922 and early 1923 have obtained notwithstanding large current earnings and a good business outlook, which, although it had its bearish factors, has by no means been such as to destroy the optimism of the majority of producers. There appears to be an element in the present market movements which is beyond vision. The full significance of the abrupt decline in stock prices, future developments alone will disclose.

A committee on relations with collegiate schools of business, with R. W. Husband, associate dean of Dartmouth College, as chairman, has been appointed by the American Management Association. Better understanding of the purposes and methods of collegiate schools of business on the part of business and better understanding of the personnel needs of commerce and industry by schools of business is expected from the activities of the new committee.

The Mayville Iron Co. of Youngstown, Ohio, capitalized at $50,000, has been granted a charter in Wisconsin, in which State its headquarters will be at Mayville, the seat of the mines and blast furnaces of the original Northwestern Iron Co., which later became a division of the Steel & Tube Co. of America.

Prices Finished Iron and Steel f.o.b. Pittsburgh

Carload Lots

Plates

Sheared, tank quality, base, per lb.....2.50c.

Structural Material

Beams, channels, etc., base, per lb.....2.50c.
Sheet piling .....2.65c.

Iron and Steel Bars

Soft steel bars, base, per lb.....2.40c.
Soft steel bars for cold finishing.....$3 per ton over base
Reinforcing steel bars, base.....2.40c.
Refined iron bars, base, per lb.....3.25c.
Double refined iron bars, base, per lb.....4.85c. to 5.00c.
Stay bolt iron bars, base, per lb.....8.00c. to 8.50c.

Hot-Rolled Flats

Hoops, ordinary gages and widths, base, per lb.....3.30c.
Hoops, light gage, under 1 in. wide.....3.50c.
Bands, base, per lb.....3.25c. to 3.30c.
Strips, base, per lb.....3.00c. to 3.30c.
Cotton ties, per bundle of 45 lb.....$1.61

Cold-Finished Steels

Bars and shafting, base, per lb.....3.25c.
Strips, base, per lb.....5.00c. to 5.25c.

Wire Products

Nails, base, per keg.....$3.00
Galvanized nails, 1 in. and over.....$2.25 over base
Galvanized nails, less than 1 in.....2.50 over base
Bright plain wire, base, No. 9 gage, per 100 lb..... 2.75
Annealed fence wire, base, per 100 lb..... 2.90
Spring wire, base, per 100 lb..... 3.70
Galvanized wire, No. 9, base, per 100 lb..... 3.35
Galvanized barbed, base, per 100 lb..... 3.80
Galvanized staples, base, per keg..... 3.80
Painted barbed wire, base, per 100 lb..... 3.45
Polished staples, base, per keg..... 3.45
Cement coated nails, base, per count keg..... 2.70
Woven fence, carloads (to jobbers).....67½ per cent off list
Woven fence, carloads (to retailers).....65 per cent off list

Bolts and Nuts

Machine bolts, small, rolled threads.....60 per cent off list
Machine bolts, small, cut threads....50 and 10 per cent off list
Machine bolts, larger and longer....50 and 10 per cent off list
Carriage bolts, ⅜ x 6 in.:
Smaller and shorter, rolled threads.50 and 10 per cent off list
Cut threads .....50 per cent off list
Larger and longer.....50 per cent off list
Lag bolts .....60 per cent off list
Plow bolts, Nos. 1, 2 and 3 heads....50 and 5 per cent off list
Other style heads.....20 per cent extra
Machine bolts, c.p.c. and t. nuts, ⅜ x 4 in..45 per cent off list
Larger and longer sizes.....45 per cent off list
Hot pressed square or hex. nuts, blank.....$3.50 off list
Hot pressed nuts, tapped..... 3.25 off list
C.p.c. and t. square or hex. nuts, blank..... 3.50 off list
C.p.c. and t. square or hex. nuts, tapped..... 3.25 off list
Semi-finished hex. nuts:
⅞ in. and smaller, U. S. S.,
75, 10 and 5 to 75 and 5 per cent off list
⅝ in. and larger, U. S. S.
70, 10 and 2½ to 70 and 2½ per cent off list
Small sizes, S. A. E.....75, 10 and 5 per cent off list
S. A. E., ⅝ in. and larger....75, 10 and 2½ per cent off list
Stove bolts in packages.....75, 10 and 5 per cent off list
Stove bolts in bulk.....75, 10, 5 and 2½ per cent off list
Tire bolts .....50, 10 and 10 per cent off list

Cap and Set Screws

Milled square and hex. head cap screws,
65 and 10 per cent off list
Milled set screws.....65 and 10 per cent off list
Upset cap screws.....75 per cent off list
Upset set screws.....75 per cent off list
Milled studs .....50 per cent off list

Rivets

Large structural and ship rivets, base, per 100 lb.....$3.25
Large boiler rivets, base, per 100 lb..... 3.35
Small rivets .....60 and 10 to 60 and 5 off list

Track Equipment

Spikes, ⅜ in. and larger, base, per 100 lb.....$3.15
Spikes, ½-in., ⅝-in. and ¾-in. per 100 lb.....$3.25 to 3.75
Spikes, ⅞ in. ..... 3.25 to 3.75
Spikes, boat and barge, base, per 100 lb..... 3.50 to 3.75
Track bolts, ¾ in. and larger, base, per 100 lb.. 4.00 to 4.25
Track bolts, ½ in. and ⅝ in., base, per 100 lb.. 5.00 to 5.50
Tie plates, per 100 lb..... 2.55 to 2.60
Angle bars, base, per 100 lb..... 2.75

Welded Pipe

Butt Weld

Steel			*Iron*		
Inches	Black	Galv.	Inches	Black	Galv.
⅛	45	19½	¼ to ⅜.....+11		+39
¼ to ⅜.....	51	25½	½	22	2
½	56	42½	¾	28	11
¾	60	48½	1 to 1½.....	30	13
1 to 3.....	62	50½			

Lap Weld

2	55	43½	2	23	7
2½ to 6.....	59	47½	2½	26	11
7 and 8.....	56	43½	3 to 6.....	28	13
9 and 10.....	54	41½	7 to 12.....	26	11
11 and 12....	53	40½			

Butt Weld, extra strong, plain ends

⅛	41	24½	2 to 3.....	61	50½
¼ to ⅜.....	47	30½	¼ to ⅜.....+19		+54
½	53	42½	½	21	7
¾	58	47½	¾	28	12
1 to 1½.....	60	49½	1 to 1½.....	30	14

Lap Weld, extra strong, plain ends

2	53	42½	2	23	9
2½ to 4.....	57	46½	2½ to 4.....	29	15
4½ to 6.....	56	45½	4½ to 6.....	28	14
7 to 8	52	39½	7 to 8.....	21	7
9 and 10....	45	32½	9 to 12.....	16	2
11 and 12....	44	31½			

To the large jobbing trade the above discounts are increased by one point, with supplementary discount of 5 per cent on black and 1½ points, with a supplementary discount of 5 per cent, on galvanized.

Boiler Tubes

Lap Welded Steel		*Charcoal Iron*	
2 to 2¼ in.....	27	1½ in. .....+18	
2½ to 2¾ in.....	37	1¾ to 1⅞ in.....+ 8	
3 in.	40	2 to 2¼ in.....— 2	
3¼ to 3¾ in.....	42½	2½ to 3 in.....— 7	
4 to 13 in.	46	3¼ to 4½ in.....— 9	

Less carload lots 4 points less.

Standard Commercial Seamless Boiler Tubes

Cold Drawn

1 in.	55	3 and 3¼ in.	36
1¼ and 1½ in.	47	3½ and 3¾ in.....	37
1¾ in.	31	4 in.	41
2 and 2¼ in.....	22	4½ in. and 5 in.	33
2½ and 2¾ in.....	32		

Hot Rolled

3 and 3¼ in.....	38	4 in.	43
3½ in. and 3¾ in....	39		

Less carloads, 4 points less. Add $8 per net ton for more than four gages heavier than standard. No extras for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be sold at mechanical tube list and discount. Intermediate sizes and gages not listed take price of net larger outside diameter and heavier gage.

Seamless Mechanical Tubing

Carbon under 0.30, base.....83 per cent off list
Carbon 0.30 to 0.40, base.....81 per cent off list
Plus usual differentials and extras for cutting. Warehouse discounts range higher.

Seamless Locomotive and Superheater Tubes

	Cents per Ft.		Cents per Ft.
2-in. O.D. 12 gage.....	15	2¼-in. O.D. 10 gage...	20
2-in. O.D. 11 gage.....	16	3-in. O.D. 7 gage.....	35
2-in. O.D. 10 gage.....	17	1½-in. O.D. 9 gage....	15
2¼-in. O.D. 12 gage...	17	5⅜-in. O.D. 9 gage....	55
2¼-in. O.D. 11 gage...	18	5½-in. O.D. 9 gage....	57

Tin Plate

Standard cokes, per base box.....$5.50

Terne Plate

(Per package, 20 x 28 in.)

8-lb. coating, 100 lb. base $11.00		20-lb. coating I. C....$14.90	
8-lb. coating I. C....	11.30	25-lb. coating I. C....	16.20
12-lb. coating I. C....	12.70	30-lb. coating I. C....	17.35
15-lb. coating I. C....	13.95	35-lb. coating I. C....	18.35
		40-lb. coating I. C....	19.35

Sheets

Blue Annealed

Nos. 9 and 10 (base), per lb.....3.00c.

Box Annealed, One Pass Cold Rolled

No. 28 (base), per lb.....3.85c.

Automobile Sheets

Regular auto body sheets, base (22 gage), per lb.....5.35c.

Galvanized

No. 28 (base), per lb.....5.00c.

Long Ternes

No. 28 gage (base), 8-lb. coating, per lb.....5.30c.

Tin-Mill Black Plate

No. 28 (base), per lb.....3.85c.

Manufacturers have pamphlets, which can be had upon application, giving price differentials for gage and extras for length, width, shearing, etc.

Freight Rates

All freight rates from Pittsburgh on finished iron and steel products, in carload lots, to points named, per 100 lb., are as follows:

Philadelphia, domestic.	$0.32	Buffalo	$0.265	St. Louis	$0.43
Philadelphia, export...	0.235	Cleveland	0.215	Kansas City	0.735
Baltimore, domestic...	0.31	Cleveland, Youngstown		Kansas City (pipe)...	0.705
Baltimore, export.....	0.225	Comb.	0.19	St. Paul	0.60
New York, domestic...	0.34	Detroit	0.29	Omaha	0.735
New York, export.....	0.255	Cincinnati	0.29	Omaha (pipe)	0.705
Boston, domestic.....	0.365	Indianapolis	0.31	Denver	1.27
Boston, export.....	0.255	Chicago	0.34	Denver (pipe)	1.215

Pacific Coast	$1.34
Pac. Coast. ship plates	1.20
Birmingham	0.58
Memphis	0.56
Jacksonville, all rail..	0.70
Jacksonville, rail and water	0.415
New Orleans	0.67

The minimum carload to most of the foregoing points is 36,000 lb. To Denver the minimum loading is 40,000 lb., while to the Pacific Coast on all iron and steel products, except structural material, the minimum is 80,000 lb. On the latter item the rate applies to a minimum of 50,000 lb., and there is an extra charge of 9c. per 100 lb. on carloads of a minimum of 40,000 lb. On shipments of wrought iron and steel pipe to Kansas City, St. Paul, Omaha and Denver the minimum carload is 46,000 lb. On iron and steel items not noted above the rates vary somewhat and are given in detail in the regular railroad tariffs.

Rates from Atlantic Coast ports (i.e., New York, Philadelphia and Baltimore) to Pacific Coast ports of call on most steamship lines, via the Panama Canal, are as follows: Pig iron, 30c. to 40c.; ship plates, 30c. to 40c.; ingot and muck bars, structural steel, common wire products including cut or wire nails, spikes, and wire hoops, 30c. to 40c.; sheets and tin plates, 30c. to 40c.; rods, wire rope cable and strands, 75c.; wire fencing, netting and stretcher, 49c.; pipes not over 8 in. in diameter, 50c.; over 8 in. in diameter, 2½c. per in. or fraction thereof additional. All prices per 100 lb. in carload lots, minimum 40,000 lb.

Prices of Raw Materials, Semi-Finished and Finished Products

Ores

Lake Superior Ores, Delivered Lower Lake Ports

Old range Bessemer, 55 per cent iron	$6.45
Old range non-Bessemer, 51½ per cent iron	5.70
Messabi Bessemer, 55 per cent iron	6.20
Messabi non-Bessemer, 51½ per cent iron	5.55

Foreign Ore, per Unit, c.i.f. Philadelphia or Baltimore

Iron ore, low phos., copper free, 55 to 58 per cent iron in dry Spanish or Algerian	11½c.
Iron ore, Swedish, average 66 per cent iron	10.50c.
Manganese ore, washed, 51 per cent manganese, from the Caucasus, nominal	48c.
Manganese ore, ordinary, 48 per cent manganese, from the Caucasus	42c.
Manganese ore, Brazilian or Indian, nominal	45c.
Tungsten ore, per unit, in 60 per cent concentrates	$8.50
Chrome ore, basic, 48 per cent Cr_2O_3, crude, per ton, c.i.f. Atlantic seaboard	$18.00 to 28.00
Molybdenum ore, 85 per cent concentrates, per lb. of MoS_2, New York	75c. to 85c.

Ferroalloys

Ferromanganese, domestic, 80 per cent, furnace, or seaboard, per ton	$125.00
Ferromanganese, British, 80 per cent, f.o.b. Atlantic port, duty paid	125.00
Spiegeleisen, domestic, 19 to 21 per cent, per ton, furnace	45.00 to 47.50
Spiegeleisen, domestic, 16 to 19 per cent, furnace, per ton	44.00 to 46.50
Ferrosilicon, 50 per cent, delivered, per gross ton	87.50 to 90.00
Ferrosilicon, Bessemer, 10 per cent, per ton, furnace	48.50
Ferrosilicon, Bessemer, 11 per cent, per ton, furnace	51.80
Ferrosilicon, Bessemer, 12 per cent, per ton, furnace	55.10
Ferrosilicon, Bessemer, 13 per cent, per ton, furnace	59.10
Ferrosilicon, Bessemer, 14 per cent, per ton, furnace	64.10
Silvery iron, 6 per cent, per ton, furnace	37.00
Silvery iron, 7 per cent, per ton, furnace	38.00
Silvery iron, 8 per cent, per ton, furnace	39.50
Silvery iron, 9 per cent, per ton, furnace	41.50
Silvery iron, 10 per cent, per ton, furnace	43.50
Silvery iron, 11 per cent, per ton, furnace	46.80
Silvery iron, 12 per cent, per ton, furnace	50.10
Ferrotungsten, per lb. contained metal	88c. to 90c.
Ferrochromium, 4 to 6 per cent carbon, 60 to 70 per cent Cr. per lb. contained Cr. delivered	12c.
Ferrochromium, 6 to 7 per cent carbon, 60 to 70 per cent Cr., per lb.	11.50c.
Ferrovanadium, per lb. contained vanadium	$3.50 to $4.00
Ferrocarbontitanium, 15 to 18 per cent, per net ton	200.00

Fluxes and Refractories

Fluorspar, 80 per cent and over calcium fluoride, not over 5 per cent silica, per net ton f.o.b. Illinois and Kentucky mines	$22.00
Fluorspar, 85 per cent and over calcium fluoride, not over 5 per cent silica, per net ton f.o.b. Illinois and Kentucky mines	23.50

Per 1000 f.o.b. works:

	High Duty	Moderate Duty
Fire Clay:		
Pennsylvania	$48.00 to $51.00	$43.00 to $46.00
Ohio	45.00 to 47.00	40.00 to 43.00
Kentucky	45.00 to 47.00	42.00 to 45.00
Illinois	48.00 to 50.00	45.00 to 47.00
Missouri	48.00 to 50.00	38.00 to 43.00
Ground fire clay, per net ton		6.50 to 9.50
Silica Brick:		
Pennsylvania		42.50 to 45.00
Chicago		52.00
Birmingham		48.00
Ground silica clay, per net ton		10.00
Magnesite Brick:		
Standard size, per net ton (f.o.b. Baltimore and Chester, Pa.)		65.00
Grain magnesite, per net ton (f.o.b. Baltimore and Chester, Pa.)		40.00
Chrome Brick:		
Standard size, per net ton		50.00

Semi-Finished Steel, f.o.b. Pittsburgh or Youngstown, per gross ton

Rolling billets, 4-in. and over	$42.50
Rolling billets, 2-in. and under	42.50
Forging billets, ordinary carbons	$47.50 to 50.00
Sheet bars, Bessemer	42.50
Sheet bars, open-hearth	42.50
Slabs	42.50
Wire rods, common soft, base, No. 5 to ¼-in.	51.00
Wire rods, common soft, coarser than ¼-in.	$2.50 over base
Wire rods, screw stock	$5 per ton over base
Wire rods, carbon 0.20 to 0.40	$3 per ton over base
Wire rods, carbon 0.41 to 0.55	$5 per ton over base
Wire rods, carbon 0.56 to 0.75	$7.50 per ton over base
Wire rods, carbon over 0.75	$10 per ton over base
Wire rods, acid	$15 per ton over base
Skelp, grooved, per lb.	2.45
Skelp, sheared, per lb.	2.45
Skelp, universal, per lb.	2.45

Finished Iron and Steel, f.o.b. Mill

Rails, heavy, per gross ton	$43.00
Rails, light, new steel, base, per lb.	2.25c.
Rails, light, rerolled, base, per lb.	2.15c. to 2.20c.
Spikes, $\frac{5}{16}$-in. and larger, base, per 100 lb.	$3.15 to $3.25
Spikes, ½-in., $\frac{7}{16}$-in. and $\frac{3}{8}$-in., base, per 100 lb.	3.25 to 3.75
Spikes, $\frac{5}{16}$-in., base, per 100 lb.	3.25 to 3.75
Spikes, boat and barge, base, per 100 lb.	3.50 to 3.75
Track bolts, $\frac{5}{8}$-in. and smaller, base, per 100 lb.	4.25 to 5.50
Track bolts, ¾-in. and larger, base, per 100 lb.	4.00 to 4.50
Tie plates, per 100 lb.	2.55 to 2.60
Angle bars, per 100 lb.	2.75
Bars, common iron, base, per lb.	2.50c. to 2.60c.
Bars, rails, steel reinforcing, base, per lb.	2.15c. to 2.25c.
Ground shafting, base, per lb.	3.65c.
Cut nails, base, per keg	$3.40

Alloy Steel

S.A.E. Series Numbers	Bars 100 lb.
2100 (1½% Nickel, 10 to 20 per cent Carbon)	$3.50 to $3.75
2300 (3½% Nickel)	5.50 to 5.75
2500 (5% Nickel)	8.00 to 8.25
3100 (Nickel Chromium)	4.50 to 4.75
3200 (Nickel Chromium)	6.25 to 6.50
3300 (Nickel Chromium)	8.25 to 8.50
3400 (Nickel Chromium)	7.25 to 7.50
5100 (Chromium Steel)	4.00 to 4.25
5200 (Chromium Steel)	8.25 to 8.50
6100 (Chromium Vanadium bars)	5.25 to 5.50
6100 (Chromium Vanadium spring steel)	5.00 to 5.25
9250 (Silico Manganese spring steel)	4.00 to 4.25
Nickel Chrome Vanadium (0.60 Nickel, 0.50 Chromium, 0.15 Vanadium)	5.50 to 5.75
Chromium Molybdenum bars (0.80—1.10 Chromium, 0.25—0.40 Molybdenum)	4.75 to 5.00
Chromium Molybdenum bars (0.50—0.70 Chromium, 0.15—0.25 Molybdenum)	4.50 to 4.75
Chromium Molybdenum spring steel (1—1.25 Chromium, 0.30—0.50 Molybdenum)	4.50 to 4.75

Above prices are for hot-rolled alloy steel bars, forging quality, per 100 lb. f.o.b. Pittsburgh. Billets 4 x 4 in. and larger are $10 per gross ton less than net ton price for bars of same analyses. On smaller than 4 x 4-in. billets down to and including 2½-in. sq. there is a size extra of $10 per gross ton; on billets smaller than 2½-in. sq. the net ton bar price applies.

A report recently published by newspapers suggesting the possibility of new financing for the Algoma Steel Corporation, Sault Ste. Marie, Ont., with a reorganization of capitalization and the passing of control from the United States to Canada was declared by president W. H. Cunningham of the Lake Superior Corporation, of which the Algoma Steel Corporation is a subsidiary, to be "without foundation in fact in any way." He further stated that officials of the company had no cognizance of any scheme for new financing of change of control. He added that the steel plant was enjoying excellent business at the moment. Orders on hand would not carry very far ahead, but he hoped that more business would be booked in the early future. Labor conditions are satisfactory, between 3000 and 4000 men being employed at the present time. He stated that the corporation was very fortunate in its relations with labor, as the workmen are now showing greater efficiency than has been the case for some years previous.

British Iron and Steel Market

Lower Prices All Along the Line Except in Steel Hoops—Ruhr Fuel Supplies May Last Until October—Tin Plate Weak

(By Cable)

LONDON, ENGLAND, July 2.

There is no improvement in the pig iron market and none is probable until after the Scottish holidays. Neither domestic nor foreign buyers are yet ready to make fresh purchases. Prices are lower and makers doubtless are prepared to accept even less for firm business. There is new talk of furnaces being banked in the near future, unless the situation improves.

Pronounced weakness has developed in hematite. Makers' stocks are accumulating and fresh orders are scarce.

Finished iron and steel are dull, domestic consumers covering immediate requirements only, and many descriptions of steel are easier. There is some improvement in Continental inquiry but business is slow in maturing.

The Continental position is complex. Iron and steel makers are inclined to adopt a firm tone. There is some local revival of demand but British and overseas markets still are mainly quiescent. French and Luxemburg industrialists naturally are apprehensive as to fuel supplies when the surface stocks in the Ruhr shall have been exhausted. These probably are sufficient for two or three months, but the likelihood of a scarcity of coke later may definitely compel higher prices.

Tin plate market shows no change. There is some expectancy regarding the attitude of the price stabilization committee, in view of the continued lack of fresh orders and the possibility of a shortage of rolling work in the near future. Common merchant business is passing at slightly below works' prices.

Galvanized sheets are easier, with only a small Indian and Far Eastern demand.

Black sheets are characterized by fair Continental inquiry and some Indian interest, but actual business is small. The Continent apparently is securing a fair amount of available business. Prices are rather easier.

We quote per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalent figured at $4.58 per £1, as follows:

Durham coke, delivered	£2	1½s.				$9.50	
Bilbao Rubio ore†	1	4				5.50	
Cleveland No. 1 foundry	6	7				29.08	
Cleveland No. 3 foundry	5	12½				25.76	
Cleveland No. 4 foundry	5	10				25.19	
Cleveland No. 4 forge	5	7½				24.62	
Cleveland basic	6	0				27.48	
East Coast mixed	5	12				25.65	
Ferromanganese	18	0				82.44	
Ferromanganese*	20	0				91.60	
Rails, 60 lb. and up	10	0	to £10	10s.		45.80 to	$48.09
Billets	8	15	to	9	15	40.08 to	44.66
Sheet and tin plate bars, Welsh	9	2½				41.79	
Tin plates, base box	1	3	to	1	3⅛	5.27 to	5.30
						C. per Lb.	
Ship plates	9	15	to	10	5	1.99 to	2.10
Boiler plates	12	10	to	13	0	2.56 to	2.66
Tees	10	5	to	10	15	2.10 to	2.20
Channels	9	10	to	10	0	1.94 to	2.04
Beams	9	5	to	9	15	1.89 to	1.99
Round bars, ¾ to 3 in.	11	0	to	11	10	2.25 to	2.35
Galvanized sheets, 24 g.	18	0	to	18	5	3.68 to	3.73
Black sheets, 24 gage	13	10	to	13	15	2.76 to	2.81
Black sheets, Japanese specifications	15	5				3.12	
Steel hoops	12	0	&	12	10*	2.45 &	2.56*
Cold rolled steel strip, 20 g.	17	7½				3.55	
Cotton ties, Indian specifications	15	0				3.07	

*Export price. †Ex-ship, Tees, nominal.

Continental Prices, All F. O. B. Channel Ports, Delivery as Specified

Foundry pig iron:							
Belgium, July	£5	5s.				$24.05	
France, July	5	5				24.05	
Luxemburg, July	5	5				24.05	
Billets:							
Belgium, July	6	10	to £6	12½		29.77 to	$30.34
France	6	10				29.77	
Merchant bars:						C. per Lb.	
Belgium, July	7	10				1.53	
Luxemburg, July	7	10				1.53	
France	7	10				1.53	
Joists (beams):							
Belgium, July	7	7½	to	7	10	1.51 to	1.53
Luxemburg	7	15				1.58	
France	7	7½	to	7	10	1.51 to	1.53
⅛-in. plates:							
Belgium, July	7	15	to	7	17½	1.58 to	1.61
¾-in. plates:							
Luxemburg	7	7½				1.51	
Belgium	7	10				1.53	

RATE INCREASE STANDS

Higher Tariffs on Iron, Steel and Other Products to the South Not Suspended

WASHINGTON, July 3.—Surprise was occasioned by the vote of the Interstate Commerce Commission last Saturday not to suspend increased rates, effective on July 1, on iron and steel products from Ohio River crossings and from points of origin, including Youngstown, Ohio, and Pittsburgh, to southeastern and Carolina territories. Confidence had been felt by iron and steel manufacturers and other interested shippers that the rates would not be allowed to become operative at least until there had been an investigation and hearing.

Seldom has a case been the source of such a great volume of protests. Involving not only iron and steel products, it also increases rates on agricultural implements, grain and grain products, refrigerators, and furniture and those associated in these lines, together with jobbers. The railroad commissions of Mississippi and North Carolina and various chambers of commerce had made vigorous protest against the schedules. So vigorous and numerous were the objections that it had been taken almost for granted that suspension would be ordered. This feeling was heightened by the fact that a considerable number of the rates are higher than those suggested by the railroads and suspended by the commission with regard to rates on iron and steel and other products from Ohio River crossings made in relation to the rates from the crossing to Mississippi Valley destinations because they appeared higher than warranted by commission decisions in previous cases.

The rates becoming effective on July 1, as an example, mean an increase from 57c. to 67c. per 100 lb. on iron and steel products from Pittsburgh to New Orleans. In the suspended Mississippi Valley case, the rate from Pittsburgh to New Orleans proposed by the railroad was 66c., but the commission on that occasion held that this rate should not exceed 57c. In the present instance, the Mississippi Railroad Commission pointed out that the rate on iron and steel articles from St. Louis to Jackson, Miss., is increased from 38c. to 46c.; to Gulfport, from 40.5c. to 50c. and to Columbia, from 49.5c. to 60c. The Virginia Bridge & Iron Co. said that the proposal was to increase the rate on iron and steel from Pittsburgh to Memphis, Tenn., and used by the company from 38.5c. to 56c.

Among others who protested were the United States Steel Corporation, the Bethlehem Steel Co., the National Tube Co., the American Rolling Mill Co., and a number of merchant blast furnace interests.

Deeming the problem one for National and not State legislation, the Wisconsin Legislature has disposed of all proposed laws concerning the field of un employment insurance. The so-called Huber bill, aiming to establish a system of unemployment compensation, was killed, and later the so-called Titus substitute, providing for an interim investigation, likewise was voted down. Employers of all classes in Wisconsin opposed the proposition vigorously as a further burden, making it extremely difficult for them to compete with employers in other States where no enactment of this character exists.

NON-FERROUS METALS

The Week's Prices

Cents per Pound for Early Delivery

	Copper, New York		Straits Tin	Lead		Zinc	
June	Lake	Electrolytic*	New York	New York	St. Louis	New York	St. Louis
27.....	15.12½	14.75	39.25	7.00	6.65	6.12½	5.77½
28.....	15.00	14.50	38.75	6.85	6.55	6.12½	5.77½
29.....	15.00	14.50	39.00	6.85	6.55	6.10	5.75
30.....	15.00	14.50	....	6.85	6.55	6.10	5.75
July 1.....	15.00	14.50	38.50	6.85	6.55	6.10	5.75

*Refinery quotation; delivered price ¼c. higher.

New York

NEW YORK, July 2.

All the markets are exceedingly quiet and quotations in most cases are lower and demand very light.

Copper.—Further weakness has developed in the electrolytic copper market and quotations are about ¼c. lower than a week ago at 14.75c., delivered. While some large producers are not quoting as low as this, the small amount of business offered is being easily taken care of at this level or even slightly lower. The volume of business is so light that it is difficult to state the exact minimum of the market. Consumers are maintaining a waiting attitude and producers are convinced that further concessions will not stabilize the market. Foreign demand is also exceedingly light. Lake copper is a little lower at 15c., delivered.

Copper Averages.—The average price of Lake copper for the month of June, based on daily quotations in THE IRON AGE, was 15.23c. The average price of electrolytic copper was 14.74c., refinery, or 14.99c., delivered.

Tin.—The market has been dull on some days and fairly active on others. On Thursday, June 28, in a moderately active market, 400 to 450 tons changed hands. Most of the sellers were those with London connections and the buying was about evenly divided between dealers and consumers. The latter are apparently becoming more interested and it is figured that about 66 per cent of the amount sold last week was bought by them. On Wednesday, June 27, about 200 tons was purchased by consumers. The premium on spot tin is diminishing with the passing of June and more liberal arrivals of the metal. Conditions may be such in the first few days of this month that this premium may disappear altogether, but may be reestablished later. Deliveries into consumption in June were 5410 tons, with 2137 tons in stock and landing on June 30. About 150 tons of metal was sold on the New York Metal Exchange during the week. Spot Straits tin was quoted today at 38.50c., New York, and quotations in London were considerably lower at £176 15s. for spot standard, £177 17s. 6d. for future standard and £179 15s. for spot Straits. These London quotations are about £6 per ton lower than yesterday and £10 per ton lower than a week ago.

Lead.—The principal feature of interest in this market has been a reduction by the leading interest on Thursday, June 28, to 6.85c., New York, which is the general quotation. The outside market, as a result, has turned weaker, with St. Louis prices down to a basis nearly equal to New York, or 6.50c. to 6.60c., St. Louis. The entire market is very quiet and dull.

Zinc.—There is practically no demand for prime Western zinc and the market is exceedingly stagnant. One producer reports the sale of 200 tons at 5.75c., St. Louis, which probably represents the market. On this basis the New York quotation is 6.10c. There is a slight premium over these July prices of about five points per month for August and September, which is the principal difference between the market now and a week ago.

Nickel.—Quotations for shot and ingot metal are unchanged at 29c. to 32c. per lb., with electrolytic nickel held at 32c. by the leading producers. In the outside spot market quotations for shot and ingot nickel are 29c. to 32c. per lb.

Antimony.—The market is a little stronger and quotations are a little higher at 6.90c., New York, duty paid, for Chinese metal in wholesale lots.

Aluminum.—Virgin metal, 98 to 99 per cent pure, is quoted in wholesale lots for early delivery by importers who can obtain the metal at 26.50c. to 27c. per lb., New York, duty paid. The leading domestic producer does not make public any quotations.

Old Metals.—The market is featureless and values are stationary. Dealers' selling prices are as fellows:

	Cents Per Lb.
Copper, heavy and crucible	14.50
Copper, heavy and wire	13.50
Copper, light and bottoms	11.50
Heavy machine composition	11.25
Brass, heavy	8.75
Brass, light	7.00
No. 1 red brass or composition turnings	9.00
No. 1 yellow rod brass turnings	7.50
Lead, heavy	6.25
Lead, tea	5.25
Zinc	4.50

Chicago

JULY 2.—Buying has again declined and, while there is some small future demand for copper, orders for the other metals are confined largely to spot deliveries. Copper, tin and lead are lower than a week ago, while zinc and antimony and the old metals remained unchanged. We quote in carload lots, Lake copper, 15.75c.; tin, 41c.; lead, 6.70c.; spelter, 5.80c.; antimony, 8.50c. in less than carload lots. On old metals we quote copper wire, crucible shapes and copper clips, 11.75c.; copper bottoms, 10c.; red brass, 8.50c.; yellow brass, 6.50c.; lead pipe, 5c.; zinc, 3.75c.; pewter, No. 1, 25c.; tin foil, 26.50c.; block tin, 32.50c. all buying prices for less than carload lots.

Canadian Scrap Market

TORONTO, ONT., July 2.—Both prices and demand are showing a weak tendency in the Canadian iron and steel scrap market. Dealers report slackness on the part of consumers in so far as placing contracts for third quarter is concerned, but it is pointed out that a limited demand exists for spot delivery. Steel plants are taking in small tonnages of heavy melting steel and turnings on spot account, but the greater part of dealers' shipments are contract business, which accounts for a good movement in scrap. The quiet state of the local market is also reflected in the export demand for scrap. Neither American nor European interests are entering the Canadian market for scrap at the present time and while dealers have some inquiries before them, no extensive buying is expected to materialize in the immediate future. While Toronto dealers have announced no further change in their buying prices, some downward revisions have been made in Montreal prices. In the Montreal market, dealers dropped their buying price on heavy melting steel from $15 to $13 per gross ton, and also report a reduction of $3 per ton in the price they are offering for No. 1 machinery scrap, this commodity now being purchased at $21 per net ton, Montreal. Iron and steel scrap prices are as follows:

Dealers' Buying Prices

	Toronto	Montreal
Gross Tons		
Steel turnings	$13.00	$14.00
Machine shop turnings	13.00	13.00
Wrought pipe	11.00	12.00
Rails	17.00	15.50
No. 1 wrought scrap	16.00	15.00
Heavy melting steel	16.00	13.00
Steel axles	18.00	18.00
Axles, wrought iron	21.00	24.00
Net Tons		
Standard car wheels	18.00	17.00
Malleable scrap	18.00	17.00
Stove plate	18.00	18.00
No. 1 machinery cast	22.00	21.00

TREND OF PRICES THIS YEAR

Averages at the End of June Show Only Slight Advance Over First of January

Notwithstanding the heavy demand for pig iron and finished steel in the early months of the year and the resultant rise in prices, the net result at the end of the first half is not an appreciable gain. According to the composite averages of THE IRON AGE prices, pig iron was only $1.83 per ton higher in the last week of June than in the first week of January, while finished steel prices were, on the average, only 0.343c. per 100 lb. higher at the end of the six months period than at the beginning.

That prices have so quickly settled back to a point close to what they were at the beginning of the year is due primarily to the very large production of both pig iron and steel during the half-year period. THE IRON AGE blast furnace figures for June, published on another page, show a total production for the six months of about 20,750,000 tons, probably 21,000,000 tons, including charcoal iron, while the indicated steel ingot production for the six months is about 23,500,000 tons. On a yearly basis, both of these production totals would establish records for the American iron and steel industry.

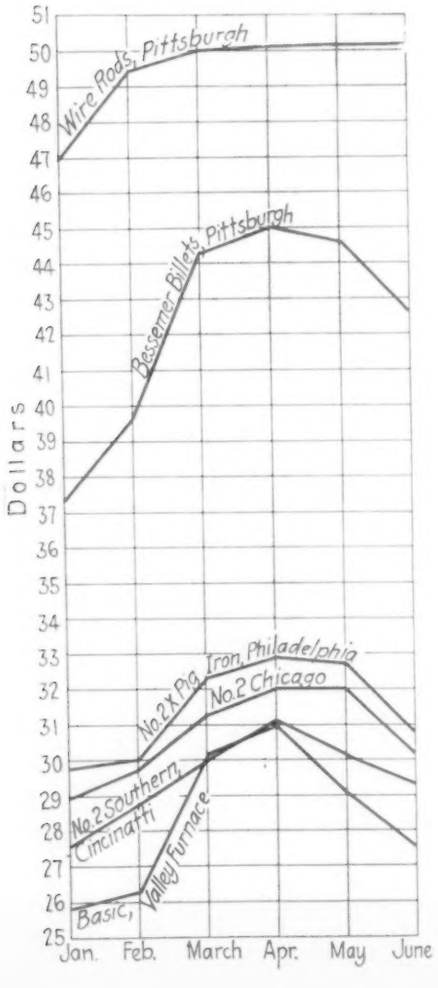
The month in which prices were highest on both pig iron and steel was April, and it was during that month that the volume of business began to show a decrease, resulting in slightly lower price averages in May and still lower in June. There has not been a change in THE IRON AGE composite price of steel in eight weeks, while the pig iron composite price has shown almost weekly downward revisions during the same period.

Prices of Leading Products for First Half of 1923

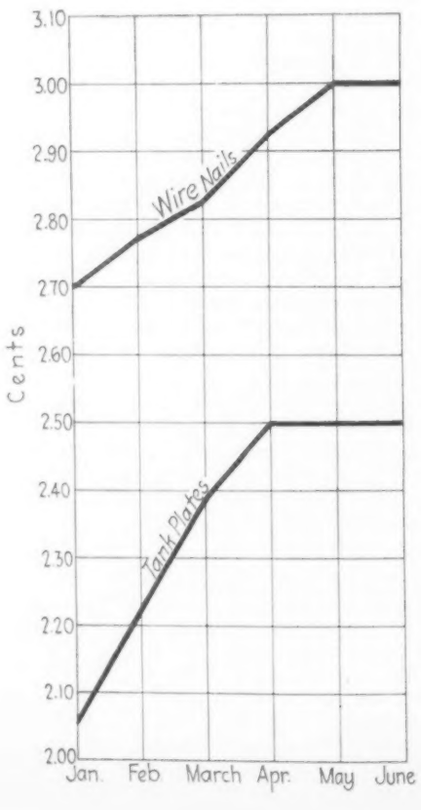
	Jan.	Feb.	March	April	May	June
No. 2X pig iron, Philadelphia	$29.76	$30.01	$32.295	$32.95	$32.76	$30.76
No. 2 Southern, Cincinnati	27.45	28.675	30.80	31.05	30.75	29.30
No. 2, Chicago	28.90	29.75	31.25	32.00	32.00	31.25
Basic, Valley furnace	25.80	26.25	30.125	31.00	29.00	27.50
Bessemer iron, Pittsburgh	29.27	29.83	32.02	32.77	31.87	30.27
Bessemer billets, Pittsburgh	37.30	39.625	44.375	45.00	44.60	42.62
Wire rods, Pittsburgh	47.00	49.375	50.00	50.25	51.00	51.00
	Cents	Cents	Cents	Cents	Cents	Cents
Steel bars, Pittsburgh	2.04	2.20	2.3875	2.50	2.40	2.40
Tank plates, Pittsburgh	2.06	2.25	2.3875	2.50	2.50	2.50
Beams, etc., Pittsburgh	2.06	2.20	2.3875	2.50	2.50	2.50
Wire nails, Pittsburgh (per 100 lb.)	2.70	2.775	2.825	2.925	3.00	3.00

Missouri Farm Produces High Grade Iron Ore

A 17,000-acre stock farm in the Missouri Ozarks purchased in 1920 by Leonard A. Busby, president the Chicago Surface Lines, Chicago, has been transformed into an iron mine with great possibilities. Contrary to the general belief that the iron ore in that region had been exhausted 30 years ago, mining engineers who have investigated the property believe the ore reserves to be very large. Recently the first daily shipment of 1000 tons of ore was made to the Granite City, Ill., plant of the St. Louis Coke & Iron Co. The ore is said to run 60 per cent in iron and under 5 per cent in silica. Mr. Busby has equipped his mine with modern machinery and hopes to increase the daily output to 3000 tons. The St. Louis Coke & Iron Co. has contracted for the entire production and has been receiving about 500 tons per day. The mine is only 85 miles from St. Louis.



The Accompanying Charts Illustrate the Sharp Rise in Steel and Pig Iron Prices During the First Half of the Year. In June Bessemer billets at Pittsburgh and all grades of pig iron recorded sharp declines, but prices of wire rods, wire nails and tank plates held steadily at the levels attained earlier in the year. The rise in wire nails was steady throughout the year until about June 1, while tank plates reached their peak about May 1 and held at the same price throughout May and June. Basic pig iron at Valley furnace has come the nearest of any commodity mentioned in the above table to getting back to a point close to its January level. This week's issue records a further decline in Valley basic, which brings it down to its first of the year price



PERSONAL

Samuel J. Reeves has been elected president of the Phoenix Iron Co., Philadelphia, manufacturer of structural shapes, with plant at Phoenixville, Pa., succeeding his father, the late David Reeves, who died Feb. 5, 1923. Samuel J. Reeves is the fourth generation of his family to serve as president of this company. W. H. Reeves, a brother of the late David Reeves, was elected chairman of the board of directors, a newly created position. G. C. Carson, Jr., who was treasurer, becomes vice-president of the Phoenix Iron Co. and president of the Phoenix Bridge Co., a subsidiary engaged in fabricated steel work. Other officers are F. P. Norris, vice-president Phoenix Bridge Co., and George Gerry White, secretary Phoenix Iron Co. Samuel J. Reeves, though still a young man, has been connected with the business for 18 years, having entered its employ upon his graduation from college. He worked through all departments and after learning the business thoroughly was elected vice-president in 1917. In 1918 he entered the Army and upon the conclusion of the war re-entered the employ of the Phoenix Iron Co. as vice-president and purchasing agent.

F. M. Feiker, formerly vice-president of the McGraw-Hill Co., Inc., and more recently on leave of absence as special agent to the Department of Commerce at Washington, after his return from that city, will be associated with the staff of the Society for Electrical Development, 522 Fifth Avenue, New York. He will retain a consulting relation to the McGraw-Hill Co., and he will continue in a similar capacity his relation to the problems of personnel and organization of the Department of Commerce at Washington.

George A. Coolclough, special export representative of the American Chain Co., Bridgeport, Conn., has sailed for England, where he will spend some time on business for the company. He will next proceed through other European countries, thence into South Africa.

F. A. Duttenhofer, purchasing agent Traylor Engineering & Mfg. Co., Allentown, Pa., has tendered his resignation to take effect not later than July 7.

George A. Orrok, chairman of the committee on publication and papers for the American Society of Mechanical Engineers, has gone to Europe on a business trip. He will not return until about the middle of August.

George E. Waller, office manager of the Wilson Foundry & Machine Co., Pontiac, Mich., has been appointed secretary of the company to succeed Earl W. MacKenzie, recently resigned. Mr. Waller will continue his duties as manager.

C. C. Rosser, who for many years has been connected with the Detroit Seamless Steel Tubes Co., has been appointed district sales manager, with offices at 1206 Guardian Building, Cleveland.

J. E. Hunter, vice-president Rochester Bridge Co., Rochester, Ind., has been elected president, succeeding Roy Dennison, resigned. This change followed a reorganization of the company.

W. H. Forbes, formerly Cleveland district sales manager of the United Alloy Steel Corporation, Canton, Ohio, has been appointed district sales manager of the Interstate Iron & Steel Co., Chicago, with headquarters at Cleveland.

E. J. Wilkie has been appointed northern sales manager of the Bucyrus Co., South Milwaukee, Wis., succeeding E. R. Weber, resigned. Mr. Wilkie has been associated with the company 14 years. He is given charge of sales in Wisconsin, Minnesota, North and South Dakota, Upper Michigan and Eastern Montana, and will continue to have headquarters at the main offices in South Milwaukee.

J. B. Nordholt of the Toledo Steel Castings Co., Toledo, Ohio, has been elected president of the National Ohio State University Association.

T. E. Schwening, superintendent, and William C. Doering, assistant superintendent Vitrified Wheel Co., Westfield, Mass., have resigned.

A. W. MacLaren, formerly general traffic manager of Morris & Co., and now vice-president of the Chicago Bearing Metal Co., Chicago, has been elected president of the Oklahoma Belt Railroad Co.

George G. Everitt, for 11 years associated with the Whitman & Barnes Mfg. Co.'s Eastern sales organization at New York, has been made manager of the New York office and warehouse, Church and Chambers Streets.

George H. Fristoe, sales manager Stocker-Rumely-Wachs Co., machine tool dealer, Chicago, has resigned to engage in other business. Mr. Fristoe has been connected with the company for over ten years, during the last four of which he has served as sales manager. Prior to becoming identified with Stocker-Rumely-Wachs Co., he was for seven years with the A. D. White Machinery Co., also of Chicago.

T. E. Geiger, formerly with the Hobart Bros. Co., Troy, Ohio, has taken over the management of the low voltage division of the Ideal Electric & Mfg. Co., Mansfield, Ohio. For several years he was factory manager of the Troy Wagon Works Co., Troy.

Percival Johnson, president Pulaski Iron Co., Philadelphia, will sail next week for Europe, to be gone most of the summer.

L. R. Louis, vice-president and sales manager of the Cleveland Cap Screw Co., Cleveland, has resigned, effective July 2. Prior to this connection he was assistant sales manager of the Foster Bolt & Nut Mfg. Co., Cleveland.

William Breeden, formerly general manager of sales of the Lackawanna Steel Co., has been appointed manager of steel sales for Peter A. Frasse & Co., Inc., in the Buffalo district, with offices at 52 Exchange Street, Buffalo.

H. A. Morlock has accepted the position of representative of Phillips Isham, New York, in the Philadelphia district, with office at 1503 Real Estate Trust Building. He was formerly connected with Shriver & Co.

OBITUARY

WILLIAM H. GIBBONS, Ardmore, Pa., formerly vice-president and treasurer of the Pulaski Iron Co., died suddenly at Plymouth, England, on June 20. He was born Sept. 14, 1852, a grandson of Martha Lukens, founder of the Lukens Steel Co., and after his graduation from Haverford College he entered the steel business with that company. He later became connected with the Parksburg Iron Co., Parksburg, Pa., eventually becoming president, a position which he held for a number of years. He was also president of the Eastern Steel Co. for a time, but his principal connection was with the Pulaski Iron Co., of which he was vice-president until the sale of the company about two years ago.

JAMES P. MARSH, formerly president of the James P. Marsh Co., manufacturer of steam specialities, 118 South Clinton Street, Chicago, died June 27, aged 82.

JOHN ECKERT, president Milwaukee Forge & Iron Co., Milwaukee, died June 22 after a long illness. He was 44 years of age.

CHARLES J. SCHLEGEL, for many years treasurer of Charles A. Schieren & Co., 30 Ferry Street, New York, died on June 25. Mr. Schlegel had been with the company for more than 40 years.

FABRICATED STEEL BUSINESS

Contracting for Oil Tanks Brought Tonnage of Awards to That of Recent Weeks

Oil tank work accounted for over two-thirds of the tonnage contracted for in fabricated steel work in the past week. Of the total of about 17,000 tons some 5000 tons covered the general bridge and building field and about half of this was for public work. New inquiries call for 11,000 tons, mostly for private enterprises. Awards include the following:

Public School No. 60, New York, 1600 tons, to Bethlehem Fabricators.

Highway bridge for Norwich, N. Y., 150 tons, to American Bridge Co.

Brooks Brothers, New York, 200 tons, to Hay Foundry & Iron Works.

Sub-station, Edison Co., Park Place, New York, 450 tons, to Hay Foundry & Iron Works.

Penn Traffic Co., Johnstown, Pa., store, 500 tons, to McClintic-Marshall Co.

Oliver school, Pittsburgh, 500 tons, to John Eichleay Jr. Co.

Humble Pipe Line Co., Houston, Tex., 10 80,000-bbl. tanks for Navarro, Tex., 3000 tons, to Chicago Bridge & Iron Works.

Magnolia Petroleum Co., 20 tanks, 4000 tons, divided equally between United Iron Works and Petroleum Iron Works.

Sinclair Crude Oil Purchasing Co., five 80,000-bbl. tanks for Oklahoma, 1500 tons, to Graver Corporation.

Humphreys Oil & Gas Co., 20 55,000-bbl. tanks with wooden roofs for Texas, 2660 tons, to Youngstown Boiler & Tank Co.

Cosden Co., Tulsa, Okla., two 55,000-bbl. tanks, 260 tons, to Kansas City Structural Steel Co.

Chicago & Alton, bridge No. 1112, over Mackinaw River, Lexington, Ill., 377 tons, to Strobel Steel Construction Co. (To be fabricated by Mt. Vernon Bridge Co.)

American Gas & Electric Co., New York, bridge span for power station at Philo, Ohio, 200 tons, to American Bridge Co.

Culver Military Academy, recreation building, Culver, Ind., 400 tons to Fort Pitt Bridge Works.

Terminal warehouse, Indianapolis, Ind., 375 tons to Rochester Bridge Co.

Edward Schuster & Co., Milwaukee, department store addition, 175 tons, to A. F. Wagner Iron Works.

St. Cosme bridge, Wayne County, Mich., 140 tons, to Wisconsin Bridge & Iron Co.

Modjeska theater, Milwaukee, 170 tons, to Lakeside Bridge & Steel Co.

Structural Projects Pending

Inquiries for fabricated steel work include the following:

Apartment houses for Bing & Bing in New York, 2000 tons.

Duquesne Light & Power Co., Pittsburgh, 500 tons, for Dwight P. Robinson & Co., New York.

Theater, Pittston, Pa., 450 tons.

Tank work, Port Arthur, Tex., for Stone & Webster Corporation, 300 to 400 tons.

Western Union office building, New Orleans, 600 tons.

First National Bank building, Davenport, Iowa, 700 tons, plans being drawn.

Illinois Central Railroad, viaduct at Forty-first Street, Chicago, 350 tons, bids to be taken.

St. Paul Gas Light Co., power plant, St. Paul, Minn., 500 tons, bids being taken.

Delaware River bridge, Philadelphia to Camden, N. J., 1900 tons for anchorage cable bents; bids close July 18.

Allerton Hotel, Cleveland, 1500 tons.

Akron Savings & Loan Co., Akron, Ohio, bank and office building, 1000 tons.

Niagara Falls Hotel, Niagara Falls, N. Y., 1000 tons.

San Francisco Market

Chinese Pig Iron Sellers Anxious to Establish Business on the Coast

SAN FRANCISCO, June 27.—Although business conditions continue good throughout central California, there is some hesitancy in making preparations for new construction in the building line, particularly class A and class B edifices, wherein large quantities of steel figure in the work. It is true that building permits are greater in number than at this time last year, but contractors point out that the number of steel frame structures now being planned is steadily growing less, because of the high cost of labor, more than the increased cost of materials. How long this condition will continue cannot be determined, but if it is maintained much longer and shows signs of expansion, it will have a very important bearing on the iron and steel industry. Prices for the present show little variation as compared with a month ago, but the trade position is so sensitive that it would not take much of a change to bring about lower prices.

Probably the largest piece of work for the near future is the Rodeo-Vallejo Ferry Co.'s steel bridge, which will span Carquinez Straits. It is stated that this structure will require 12,000 tons of steel. The bridge is being fabricated in an Eastern mill, and the first shipments are expected within the next 60 days. Pile drivers are now at work, and steam shovel work will begin shortly after the Fourth of July. Another good sized piece of work which will require a considerable steel tonnage is the new $2,000,000 Senator Hotel, for which ground is now being broken in Sacramento facing the State Capitol grounds.

Pig Iron.—Prices of foreign iron remain the same substantially, with the range from $35 to $38 per ton ex ship, duty paid. Domestic iron is almost at a standstill, and importers say it is a little early to quote prices for third quarter. One feature of the trade which is attracting a larger than usual measure of attention just now is the use of Chinese iron. There has been an uncertain quantity of Chinese iron imported during the past few months, and it is said to have been satisfactory. Chinese makers, in the hope of building up a larger trade on this coast, have asked for firm offers for round lot tonnages. As far as can be learned, however, no real business has been closed, a fact due probably to the unsteadiness of the market situation coupled with the uncertainties of what turn the Eastern markets may take. There are also some indications of business in both domestic and foreign iron, but in this case also it is doubtful whether any trade has been consummated, outside of a few small lots which are of no material importance.

Old Material.—Offerings are reported as just about sufficient to supply the present demand, which seems to be confined within rather narrow limits. Backwardness in buying appears to be a little more marked than a few weeks ago, but prices remain quotably the same as two weeks ago. There has been some foreign scrap coming to hand recently, and there will be more. A sailing vessel is now en route from Chili with 3000 tons gross mixed railroad iron, but the bulk of this is probably already spoken for.

Little Inquiry for Railroad Equipment

An inquiry for new cars and one for used cars and locomotives constitute the chief items of the week's developments in the railroad equipment field, and are as follows:

The Consolidated Purchasing Agency, American Short Line Railroad Association, McCormick Building, Chicago, is in the market for the following used equipment: Four 10-wheel locomotives, approximately 60 tons in weight; 3 Mogul locomotives, approximately 60 tons in weight; 8 Consolidation locomotives, approximately 72 tons in weight; all must have wheel centers not more than 50 in., steam pressure 160 to 200 lb.; 50 40-ton box cars, steel underframes preferred; 85 40-ton gondola cars, steel underframes preferred; 68 40-ton flat cars, steel underframes preferred; 3 steel-underframe passenger coaches (small type preferred); 10 8-wheel cabooses.

The Atchison, Topeka & Santa Fe is inquiring for 300 gondola cars.

Machinery Markets and News of the Works

RAILROADS LEAD IN JUNE

Buying by Industrial Companies Dull—Orders Largely for Single Machines

Pennsylvania Railroad and Santa Fe Inquire for Tools—Other Inquiries Noted

Companies sharing largely in recent railroad orders report good business for the month; for others, June was not outstanding as compared to some of the previous months of the year. During the past week, orders for the most part have been for single machines, although a number of fair-sized sales have been noted.

The Pennsylvania Railroad has an inquiry out for four punches and shears and the Santa Fe Railroad has sent out an inquiry for a number of tools in addition to those placed last week.

The Harbor Commissioners of Montreal have issued an inquiry for machine tool equipment and the Public Service Gas Corporation, Philadelphia, wants three engine lathes. The General Electric Co. is taking bids on miscellaneous equipment. The Standard Seamless Tube Co., Pittsburgh., is expected to buy a number of tools shortly.

Formal inquiry for tools for the new shop of the Railway Steel Spring Co. is expected before long and a few tools will probably be placed soon by the Pittsburgh Steel Products Co., in connection with extensions to its Allenport, Pa., plant.

The Elgin, Joliet & Eastern list may be closed soon, but the Burlington inquiry will probably not be disposed of for some time. It is reported that action on the Pere Marquette list has been postponed for a few weeks.

An award of the tools for which bids were taken by the Pittsburgh Board of Education is expected shortly. The Cicero, Ill., Board of Education has purchased six additional tools.

The Canadian National Railways were expected to close bids July 2 on seven tools. Purchases during the week include nine tools by a Mississippi railroad. The Ford Plate Glass Co., and the Toledo Machine & Tool Co., bought during the week, and the Joyce-Cridland Co., and the Delco Light Co., both of Dayton, Ohio, have made purchases. Sales of press brakes were made in the Cincinnati district.

Activity in used machinery is noted. In the Cleveland field the equipment of two or three Ohio plants has been purchased.

New York

NEW YORK, July 2.

COMPANIES specializing in shop equipment for railroads or plants doing railroad work have had a very satisfactory business in June, in fact, in one or two instances, it has been one of the best months of the year, but the same is not true of machine-tool companies making the standard lines of tools which are used only incidentally in railroad shops. One large machine-tool company reports that its June sales the country over were about half of the amounts done in the first three months of the year. Most of the buying the past week, as in the week before, has been done by the railroads or by companies doing railroad work.

The Florida East Coast Railroad closed for a 42-in. boring mill, an axle lathe, two small lathes, a shaper and other tools and flue equipment. The Virginian Railway bought a 500-ton, double car-wheel press. The Baldwin Locomotive Works, Philadelphia, placed an order for two 6-ft. radial drills. The Tennessee Central bought a slotter and the Chicago, Rock Island & Pacific a 53-in. boring mill. The Southern Pacific placed an order for a 90-in. driving wheel lathe and a quartering machine for one of its shops in California. The Central Railroad of New Jersey has closed for the eight or 10 tools for which it inquired a few weeks ago, and the Lehigh Valley Railroad is expected to buy six or eight tools within a week. No orders have been received here from the Norfolk & Western against its large list issued some weeks ago.

The Otis Elevator Co., Eleventh Avenue and Twenty-sixth Street, New York, has awarded contract to the Turner Construction Co., for a five-story addition to its plant at Yonkers, N. Y.

A. Lamberg & Co., 243 Center Street, New York, machinery dealer, has inquiries out for a power shear for soft metal cutting.

The Northern Union Gas Co., 1815 Webster Avenue, New York, has preliminary plans for new repair shops near its present works. Jardine, Hill & Murdock, 347 Madison Avenue, are architects.

Following the removal of its plant at the foot of Sands Street, Brooklyn, to its new location for the concentration of production, the E. W. Bliss Co., manufacturer of machinery, will discontinue all operations at the previous works and the property will be placed on the market. It consists of a number of buildings, totaling 200,000 sq. ft.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until July 17 for five electric grinders, schedule 1029, for the South Brooklyn Navy Yard.

The Stewart-Warner Speedometer Corporation, 551 West Fifty-second Street, New York, with headquarters at 1828 Diversey Parkway, Chicago, is completing plans for a three-story factory branch, 100 x 100 ft., on Sixty-fifth Street, near Columbus Avenue, with service station and repair department, to cost approximately $100,000.

The Electric Bond & Share Co., 71 Broadway, New York, operating electric light and power utilities, is disposing of a preferred stock issue of $2,750,000, a portion of the proceeds to be used for extensions.

The Fireproof Products Co., 426 Third Avenue, New York, has leased the building at Twelfth and Jackson Avenues, Long Island City, totaling 5000 sq. ft., now in course of erection, for a new plant.

The Robert Findlay Mfg. Co., 100 Lexington Avenue, Brooklyn, manufacturer of lighting fixtures, has plans for extensions in its three-story plant, to cost $25,000. J. D. Weiss, 175 Fifth Avenue, New York, is architect.

The Line Material Co., 50 Church Street, New York, manufacturer of electric equipment, with plant at South Milwaukee, Wis., has leased space in the building at 524-26 East 134th Street for a factory branch.

The Department of Public Works, Borough Hall, St. George, West New Brighton, N. Y., has plans for a one-story machine repair and service shop for municipal trucks and cars, 58 x 95 ft., on the Clove Road, to cost $40,000.

Manual training equipment will be installed in the new junior high school to be erected at Schenectady, N. Y., to cost about $200,000, for which ground will soon be broken. The Board of Education is in charge.

The Atlas Portland Cement Co., 25 Broadway, New York, has organized a subsidiary company, the Atlas Portland Cement Co. of Kansas, to take over the plant of the Western States Portland Cement Co., Independence, Kan. Exten-

The Crane Market

Business in cranes has not been particularly active during the past week and few new inquiries have appeared. The Third Avenue Railway System, New York, has asked for bids on a 10-ton, 31-ft. 3¾-in. span, double-hook overhead crane for lifting cars. The Railway Steel Spring Co., 30 Church Street, New York, has been receiving bids on two 15-ton, 80-ft., 6-in. span, double-hook overhead traveling cranes. The General Electric Co., which recently closed on a list of several overhead cranes, is inquiring for a small gantry crane for Schenectady, N. Y. Hugh L. Cooper & Co., 101 Park Avenue, New York, engineers, have closed with the Virginia Bridge & Iron Works, Roanoke, Va., on three large gantry cranes for handling concrete at the Wilson Dam, Florence, Ala.

Among recent purchases are:

Lockwood-Greene & Co., New York, a 5-ton, 3-motor and a 1-ton, 1-motor, overhead traveling cranes for the Jenkins Bros. plant at Bridgeport, Conn., from the Northern Engineering Works.

Otis Elevator Co., Yonkers, N. Y., four 5-ton, 47-ft. span cranes and a 5-ton, 48-ft. span, 3-motor overhead traveling crane for the Quincy Works of the company, Quincy, Ill., and a 7½-ton, 67-ft. 6-in. span overhead crane for the Yonkers works, from the Bedford Foundry & Machine Co., through Philip T. King, 30 Church Street, New York.

Interborough Rapid Transit Co., New York, a 4-ton, monorail hoist from the Shepard Electric Crane & Hoist Co.

West Penn Power Co., Pittsburgh, a 4-ton, 33-ft. 10-in. span, grab bucket crane with 2½-cu. yd. bucket from the Milwaukee Electric Crane & Mfg. Co.

Southern Pacific Co., 120 Broadway, New York, two large pile drivers from the Industrial Works.

Mead-Suydam & Co., Newark, N. J., a 1-ton, 12-ft. span, underhung hand power crane from the New Jersey Foundry & Machine Co.

Empire Steel Construction Co., Shreveport, Iowa, a 10-ton, 60-ft. span, 3-motor, overhead traveling crane, from Alfred Box & Co., Philadelphia.

Philadelphia Rapid Transit Co., Philadelphia, two 20-ton, 2-motor crane trolleys and two 5-ton, 28-ft. span, 3-motor, overhead traveling cranes from Alfred Box & Co.

Denver, Rio Grande & Western Railway Co., through Battey & Kipp, Chicago, engineers, 16 7½-ton, 1-motor, 17-ft. span overhead traveling cranes and two 7½-ton, 14-ft. span, 2-motor, overhead traveling cranes, from Alfred Box & Co.

Barber Asphalt Co., Maurer, N. J., has purchased a used 20-ton Brown-hoist locomotive crane for its Chicago plant.

National Cement Co., Birmingham, Ala., has purchased a used 20-ton industrial locomotive crane.

Westinghouse Electric Crane & Mfg. Co., Sharon, Pa., two 5-ton cranes from the Whiting Corporation and a 10-ton and 3-ton crane from the Northern Engineering Works.

Olean Electric Light & Power Co., Olean, N. Y., a 30-ton, 33-ft. span, 2-motor, overhead traveling crane, from the Milwaukee Electric Crane & Mfg. Co.

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sions and improvements will be made. Additional equipment will be installed.

The Brewer Dry Dock Co., Mariners Harbor, Richmond, N. Y., will build a one-story addition to its ship repair works, 50 x 62 ft., to cost about $17,000.

The Commercial Solvents Corporation, 17 East Forty-second Street, New York, has acquired a plant at Peoria, Ill., which it will remodel. The company recently arranged a fund of $1,000,000 for the erection of new works and will now apply this appropriation for the purchase of the existing plant and additional machinery.

Officials of the Adams Express Co., 51 Broadway, New York, have formed the Adams Express Armored Car Co., with capital of $1,000,000, to build steel-plate armored automobiles, as an extension of its branch heretofore known as the Adams Armored Car Service, with headquarters at 7 Hanover Street.

The Read Machinery Co., York, Pa., has leased property at 380-82 Canal Street, New York, for a factory branch.

Consolidation plans have been perfected by the reorganization committee of the Habirshaw Electric Cable Co., 10 East Forty-third Street, New York, and its subsidiaries, the Habirshaw Electric Cable Co., Inc., the Electric Cable Co., and the Bare Wire Co., under the first noted name. A preferred stock issue of $1,500,000 will be sold, the proceeds to be used for general plant work and financing. Both factories of the merged company at Yonkers, N. Y., and Bridgeport, Conn., will be continued in operation and improvements made. Malcolm D. Whitman is chairman of the committee.

The Garford Motor Truck Co., Long Island City, has disposed of its property at the Bridge Plaza, and has purchased the new factory at William and Thirteenth Streets, 100 x 200 ft., to operate in conjunction with the main plant at Lima, Ohio.

Power equipment, conveying and other machinery will be installed in the new three-story plant to be erected by the Elizabeth Daily *Journal*, Elizabeth, N. J., estimated to cost $150,000. C. Godfrey Poggi, 275 Morris Avenue, is architect.

The Armoboard Co., Central Avenue, Orange, N. J., manufacturer of concrete blocks, has acquired about 4 acres on Long Avenue, Hillside, Newark, with existing factory. The building will be remodeled and machinery installed. Plans are also being prepared for a new plant on adjoining property. The present works will be removed to the new location. James A. Birkholtz is head.

The Western Electric Co., 195 Broadway, New York, has revised plans for its new plant at Kearny, N. J., enlarging the projected works to cost $20,000,000, instead of $5,000,000. The plant will be completed within the next twenty-four months.

Manual training equipment will be installed in the new three-story high school to be erected at Park Avenue and Market Street, Paterson, N. J., estimated to cost $1,250,000, for which plans are being prepared by William T. Fanning, 5 Colt Street. For particulars regarding machine-tool equipment to be installed inquiries should be addressed to James F. Dunphey, secretary Board of Education, Paterson.

The plant of the Davis-Bournonville Co., Van Wagenen Avenue, Jersey City, N. J., manufacturer of welding equipment, has been sold to a number of industrial interests, and will be entirely vacated by the former owner.

The General Water Supply Co., Collingswood, N. J., has plans for a new electrically-operated pumping plant to cost in excess of $45,000. T. Yorke Smith is president.

The Whitall Tatum Co., 46 Barclay Street, New York, manufacturer of glass bottles, containers, etc., is perfecting plans for new buildings at Millville, N. J., to replace the structures destroyed by fire several months ago with loss of about $75,000. Automatic blowing machines and other equipment will be installed.

A manual training department will be installed in the new Alexander Hamilton junior high school to be erected at Westfield Avenue and Cherry Street, Elizabeth, N. J., estimated to cost $500,000, for which plans are being completed by Kilham, Hopkins & Greeley, 9 Park Street, Boston, architects.

A one-story power plant will be erected by the Goerke Co., 701 Broad Street, Newark, on Halsey Street, in connection with its new department store, to cost about $5,000,000. The installation will comprise three 150 hp. boilers, generator, pumps and auxiliary machinery. William E. Lehman, 738 Broad Street, is architect.

Power, conveying and other equipment will be installed in the three-story printing plant, 63 x 107 ft., to be erected by the American Colortype Co., 43-47 Halleck Street, Newark, estimated to cost $85,000. Headquarters of the company are at 1151 Roscoe Street, Chicago.

A refrigerating plant will be installed in the new meat-packing factory to be erected by the Greater Newark Packing Corporation, Newark, recently organized with a capital of $500,000. The company has purchased five acres on Plum Point Lane and will erect a plant to cost $150,000. The company is headed by Bernard J. Cummings and James H. O'Connell, and is represented by Michael J. Quigley, 738 Broad Street, attorney.

The Eagle Tool & Machine Co., 37 Freeman Street, Newark, N. J., is in the market for a hydraulic press of about 500 tons pressure for die forcing or hobbing.

The Seaboard Sand & Gravel Corporation, 26 Cortlandt Street, New York, will install machinery at its properties at Port Jefferson, L. I., for digging, hoisting, conveying, etc., with power equipment, to cost in excess of $200,000. The company has over 800 acres and has recently secured a loan in the amount noted to be used in part for the installation. George W. Loft and W. Butler Duncan head the organization.

The Municipal Gas Co., Albany, N. Y., is perfecting plans for a one-story electric substation on Partridge Street, to cost about $35,000.

The Culvers Hydro-Electric Co., Branchville, N. J., has acquired the plant and property of the Branchville Electric Power, Water & Light Co. Permission has been secured for a stock issue of $90,000, a portion of the proceeds to be used for extensions and the installation of additional equipment.

The New York Edison Co., 130 East Fifteenth Street, New York, will commence the erection of a ten-story automobile service and storage building, 115 x 415 ft., with machine shop and parts department, at 708-20 First Avenue, to cost approximately $2,000,000 with equipment. Thomas E. Murray, 55 Duane Street, is engineer.

Power equipment, ovens, conveying and other machinery will be installed in the new five-story plant, 45 x 100 ft., to be erected by the Gottfried Baking Co., 534 East Seventy-second Street, estimated to cost $100,000. William H. Gompert, 171 Madison Avenue, is architect; L. S. Beardsley, 116 West Thirty-ninth Street, is engineer.

Philadelphia

PHILADELPHIA, July 2.

BIDS will soon be asked by the Steel Heddle Mfg. Co., Twenty-first Street and Allegheny Avenue, Philadelphia, manufacturer of textile machine equipment, for the erection of a new plant at Greenville, S. C. J. E. Sirrine & Co., Greenville, are engineers.

The Philadelphia & Reading Railway Co., Reading Terminal, Philadelphia, is planning the construction of a new mechanical coaling plant at Rutherford, Pa., with coal-crushing machinery and power equipment, estimated to cost $500,000.

Fire, June 27, destroyed a portion of the plant of the Darby Steel Equipment Co., 1927 North Germantown Avenue, with loss estimated at $20,000. It is planned to rebuild.

The new plant of the North Brothers Mfg. Co., Lehigh and American Streets, Philadelphia, manufacturer of tools, hardware etc., will be five-stories and basement, 60 x 120 ft., on Somerset Street, to cost $90,000. The William Steele & Sons Co., Sixteenth and Arch Streets, is engineer and contractor.

The Delaware River Bridge Joint Commission, Widener Building, Philadelphia, will soon take bids for about 7000 tons of wire cable, 30-in. in diameter and smaller, for the new bridge between Philadelphia and Camden, estimated to cost $2,500,000, including installation. Bids will also be asked for steel anchorage bents for the cable installation, approximating 1700 tons of steel, to cost approximately $250,000.

The Pennsylvania Railroad Co., Broad Street Station, Philadelphia, is considering the installation of a traveling crane, about 5 tons capacity, at its machine shops, Erie, Pa.

The Philadelphia Commercial Museum, Thirty-fourth Street, is in receipt of an inquiry from San Luis Potosi, Mex., for an air compressor, with air hammers for breaking, trimming, etc., and from Kingston, Jamaica, for rock drills, automatic hammers and other tools used in limestone quarry operations.

The Ellwood Ivins Tube Works, Inc., Oaklane, Philadelphia, is having plans drawn for a two-story building, 25 x 55 ft. Andrew C. Borzner, 717 Walnut Street, is architect.

Manual training equipment will be installed in the three-story junior high school to be erected at Forty-seventh Street and Fairmont Avenue, Philadelphia, to cost in excess of $500,000, for which bids are being asked on a general contract. Irwin T. Catharine, Board of Education, is architect.

William A. Matsinger, 5851 Walnut Street, Philadelphia, has plans for a one-story iron and steel works at 5740-42 Westminster Street.

The Crossley Machine Co., Monmouth Street, Trenton, N. J., manufacturer of clay-working machinery, will commence the erection of a two-story addition.

Manual training equipment will be installed in the two-story and basement high school to be erected at Berwick Street and Seitz Avenue, Easton, Pa., for which bids will be received on a general contract until July 9. It will cost $350,000. William T. Michler, Draker Building, is architect.

The Barnes Foundry Co., Freeland, Pa., has acquired property at Jersey City, N. J., for a new plant and will remove to the new location.

The Borough Council, Delta, Pa., is planning for the immediate rebuilding of the portion of the municipal pumping plant destroyed by fire June 24 with loss of about $25,000, including equipment.

The Keystone Cabinet Co., Littlestown, Pa., recently organized with a capital of $50,000, is planning the operation of a factory to manufacture kitchen cabinets. Henry H. Ross heads the company and will act as general manager.

The Metropolitan Edison Co., Reading, Pa., has acquired the interest of the York Railways Co., York, Pa., in the York Haven Water & Power Co., York Haven, Pa. Plans are under consideration for extensions. The purchasing company is making improvements and repairs in its Reading generating station to cost $15,000. Plans are being perfected for the formation of five subsidiaries, the Rockland, Alsace, Pike, District and Ruscomb Manor Electric companies, to operate plants and systems in neighboring districts.

The Davies & Thomas Co., Catasauqua, Pa., will install a new cupola at its foundry and make other improvements for the production of heavy castings.

D. D. Hammelbaugh, secretary Board of School Directors, Harrisburg, Pa., will receive bids until July 9 for the construction of a power house at the new senior high school, Sixth and Division Streets. C. Howard Lloyd, 701-A Telegraph Building, is architect.

The Wincroft Stove Works, Middletown, Pa., has acquired eight acres at Florin, Pa., as a site for a new plant. Plans are being drawn for a foundry and an assembling works and other buildings will be erected later. The removal of the present works is also under consideration.

The Salford Power & Light Co., Salford, Pa., now being organized, is planning the installation of an electric plant and system. The company is represented by Thomas J. Perkins, Allentown, Pa.

The Carlisle Gas & Water Co., Carlisle, Pa., will take over the plants and systems of the North Middleton & Carlisle Electric Co., and the West Pennsboro & Carlisle Electric Co. It is planned to make extensions and improvements and install additional equipment.

The Philadelphia Rapid Transit Co., 810 Dauphin Street, Philadelphia, will make extensions and improvements in its power house at Thirteenth and Mount Vernon Streets to cost about $25,000.

New England

BOSTON, July 2.

NO machine tool business of volume was put through in this section the past week. Individual sales largely involved single machines and were few and far between. Prices at which some tools, classified as used equipment, sold put manufacturers at a disadvantage. For instance, a milling machine practically as good as new and listed around $2,800, sold for $1,100, while large grinding equipment in excellent condition also sold for less than half listed prices. In at least two instances buyers took the tools because of prices named and not because they will be put to immediate use. A large number of quotations are out on equipment, and dealers are confident much of this will be purchased during the month.

The crane market is relatively more active than the machine tool. Jackson & Moreland, Boston, engineers, have purchased a 16-ton crane with a 25 ft. span for the Utilities Power Co., Bristol, N. H., plant. The Hunt-Spiller Mfg. Corporation, South Boston, gunmetal castings, is still negotiating for two and possibly three cranes; the American Steel & Wire Co., Worcester, has a crane inquiry out, and a Massachusetts manufacturer of pipe fittings is asking prices on two small cranes.

The United States Electric Tool Co. has advanced prices on its product approximately 10 per cent.

Charles H. Jillson and Arthur Merriman, Plantsville, Conn., will engage in the manufacture of automobile bodies in the Randolph Cowles Building, Summer Street.

A loss estimated at $20,000, due to fire, was experienced recently by the Libow Spring Bed Co., Main Street, Springfield, Mass.

James E. Allen, 283 Essex Street, Lawrence, Mass., architect, is taking bids on a proposed school to be erected in Waverly Park, North Andover, Mass., which will contain a manual training department.

Bids will be asked about Aug. 1 on a three-story, 230 x 232 ft. high school to cost about $700,000 for Chelsea, Mass. It will contain machine and printing shops and a manual

training department. S. S. Eisenberg, 46 Cornhill, Boston, is the architect.

Contract has been awarded for the superstructure for a two-story, 50 x 76 ft. and 116 x 120 ft. addition by the General Electric Co., West Lynn, Mass. I. F. Baker is general superintendent.

Waste heat dryers and other equipment are required for the $250,000 manufacturing plant to be erected at Plaistow, N. H., by the Merrimac Clay Products Co., Inc., 53 State Street, Boston, the contract for the building of which has just been let.

Richards & Co., 200 Causeway Street, Boston, are the contractors for the Lowell school, Jamaica Plain, Boston. An award for furnishing and installing sheet metal working machinery has just been let by the city.

The Graton & Knight Mfg. Co., Worcester, Mass., manufacturer of mechanical belting, etc., will make extensions and improvements to cost about $50,000.

The Blackstone Valley Gas & Electric Co., Pawtucket, R. I., is having plans prepared for additions to its plant and system, to cost in excess of $2,000,000 with equipment.

The Bennett Wire Co., Water Street, Norwalk, Conn., will commence the construction of a one-story addition.

F. A. Jasset, 37 Crescent Street, Newton, Mass., operating a machine shop, is planning for the installation of a pipe-cutting and threading machine, second-hand.

The Merrimac Clay Products Co., 53 State Street, Boston, is having plans drawn for a new plant to cost about $250,000, including equipment. H. and J. R. Raeder, address noted, are engineers.

The Connecticut Co., 127 Church Street, New Haven, Conn., has acquired property on Capitol Avenue, Meriden, Conn., as a site for new car barns and shops, estimated to cost $150,000. The structure will replace a building destroyed by fire several months ago.

The Haverhill Electric Co., Haverhill, Mass., is arranging for a stock issue of $376,740, a portion of the proceeds to be used in connection with plant additions and improvements.

Pittsburgh

PITTSBURGH, July 2.

THE Westinghouse Electric & Mfg. Co. has begun to close against its requirements for the new transformer plant at Sharon, Pa., and an award of the tools for which bids were recently taken by the Pittsburgh Board of Education for the vocational department of the Westinghouse high school is expected shortly. Outside of these projects, machine tool business is still slack, although some improvement has been noted in inquiries the past few days. Formal inquiry for tools for the new shop of the Railway Steel Spring Co., Latrobe, Pa., is expected before long, and a few tools will probably soon be placed by the Pittsburgh Steel Products Co. in connection with extensions to its Allenport, Pa., plant.

The Allegheny Plate Glass Co., Glassmere, Pa., is taking bids on a general contract for a three-story and basement addition, 105 x 120 ft., estimated to cost $150,000. The Cruikshank Engineering Co., Fifth Avenue Arcade, Pittsburgh, is engineer.

Manual training equipment will be installed in the proposed two-story high school to be erected at Apollo, Pa., estimated to cost $100,000. J. D. Boyldston, secretary of the Board of Education, is in charge.

The Pond Creek Pocahontas Coal Co., 1 Broadway, New York, has preliminary plans for extensions and improvements in its properties at McDowell, W. Va., including the installation of electrical and mechanical equipment. An appropriation of $1,000,000 is being arranged for the project.

Fire, June 24, destroyed a portion of the plant of the Copper Clad Steel Co., Rankin, Pa., manufacturer of steel, welded copper and other metal products, with loss estimated at $75,000; the wire mill, 150 x 250 ft., was demolished. The foundry of the Acheson Mfg. Co., 100 x 150 ft., on adjoining site, was also destroyed, with like loss, including equipment. The latter company specializes in the manufacture of pipe, steam fittings, etc. Jacob Roth is president of the first noted company, and Fred Robertshaw is general manager at the Acheson works. Both companies are planning to rebuild.

The West Penn Power Co., West Penn Building, Pittsburgh, has concluded negotiations for the purchase of the Karns City Borough Electric Corporation and a number of other electric light and power utilities. The properties will be merged and extensions and improvements made. The company has also secured rights-of-way in Plum and Patton Townships for transmission line construction. A fund of $50,000,000 is being arranged by the sale of stock.

The National Engineering & Machine Co., Sharpsburg, Pa., has tentative plans for an addition to its plant, estimated to cost $50,000 with machinery. W. H. Caldwell is head.

The Allegheny County Steam Heating Co., 703 Chamber of Commerce Building, Pittsburgh, is planning the installation of coal-handling, unloading and conveying machinery at its new plant on Duquesne Way.

The Premier Red Ash Coal Co., Bluefield, W. Va., will commence the construction of a new steel tipple at its property on Coal Creek in the Clinch Valley district. Other electrical and mechanical equipment will be installed.

The Board of Education, Clarksburg, W. Va., has plans for an addition to the Triadelphia high school, to be equipped as vocational shops and other industrial service. It will cost $75,000.

Fire, June 24, destroyed a portion of the plant of the Lucinda Refining Co., Lucinda, Pa., with loss reported at $50,000 including equipment. It is planned to rebuild.

The Sharpsville Furnace Co., Sharpsville, Pa., is planning the installation of a lathe, boring mill, drill press and other machine shop equipment.

Baltimore

BALTIMORE, July 2.

BIDS will be received by the General Purchasing Officer, Panama Canal, Washington, until July 18, for one engine lathe, drill presses, bench grinder, blowers, valves, and other equipment, as specified in circular 1541.

The American Meter Co., 307-9 East Saratoga Street, Baltimore, has awarded contract to the West Construction Co., American Building, for a new seven-story plant, 37 x 83 ft., to cost $75,000, for which foundations will be laid at once.

The Robe Motor Corporation of Virginia, 4 Arcade Building, Norfolk, recently organized with a capital of $500,000, has plans for the first unit of a new works to manufacture six-cylinder automobiles and parts, to be 50 x 300 ft., located at Nansemond, Va. W. B. Robe is manager and will also act as construction engineer.

The Blue Lick Coal Co., Myersdale, Md., recently organized, is planning the installation of electrical, power and other machinery at its properties. Frederick and F. E. Rowe, both of Myersdale, and Clyde J. Rowe, Frostburg, Md., head the company.

McColl & English, Inc., Bennettsville, S. C., has inquiries out for a steam shovel, excavating, washing and screening machinery, and other equipment for its sand and gravel properties. A small locomotive will also be purchased.

Bids will be received by the Bureau of Supplies and Accounts, Navy Department, Washington, until July 17, for two air compressors for the Boston and Philadelphia navy yards, schedule 1034.

T. J. Babington, Shelby, N. C., operating a foundry on North Lafayette Street, has acquired a site in another section of the city, and will soon break ground for a new plant.

The Common Council, Andrews, N. C., is perfecting plans for a hydroelectric power plant on the Hiawassee River, estimated to cost $300,000 with machinery.

The City Council, Hagerstown, Md., is planning the installation of an electrically-operated pumping plant in connection with new waterworks. G. L. Bean, 806 Abbott Building, Philadelphia, is engineer.

The Cement Products Mfg. Co., Roanoke, Va., will soon break ground for a new plant at Wasena, for the manufacture of tile blocks and other cement products. Presses, power equipment and other machinery will be installed.

B. W. Willis & Co., 13½ North Second Street, Richmond, Va., operating a machine works, are planning the installation of a lathe, drill press and other equipment.

E. E. Wollert & Son, Littleton, N. C., have plans in preparation for the rebuilding of the portion of their woodworking plant and power house recently destroyed by fire with loss of about $50,000. The company is in the market for a high speed planer and matcher, trimmer, edger, band resaw and other machinery, as well as shafting and transmission equipment.

The Kelly-Springfield Tire Co., Cumberland, Md., has closed its branch mill at Akron, Ohio, effective July 1, and will concentrate operations at its Cumberland works.

The Harvey Co., 113 South Street, Baltimore, contractors' equipment, has inquiries out for a 40 to 50-ton switching locomotive, standard gage.

Bids will be received by the Bureau of Yards and Docks, Navy Department, Washington, until July 18, for an electric

traveling bridge crane for the Puget Sound Navy Yard, specification 4861.

The Linde Air Products Co., 30 East Forty-second Street, New York, has awarded contract to the Savannah Steel Products Co., Savannah, Ga., for a new plant at Stiles Avenue and Gwinnett Street, to cost $75,000.

The Superior Anthracite Coal Corporation, Lynchburg, Va., is planning for the installation of a coal breaker at its properties in the Brush Mountain section, Montgomery County. Other equipment, including washing machinery, will also be installed. W. W. Coffey is president.

Fire, June 25, destroyed a portion of the plant of the Hickory Chair Mfg. Co., Hickory, N. C., with loss estimated at $125,000, including machinery. The finishing department was entirely demolished. It is planned to rebuild.

Manual training equipment will be installed in the proposed high school to be erected at Hopewell, Va., estimated to cost $100,000, for which plans will soon be prepared. R. K. Hoke, superintendent, Board of Education, is in charge.

The Winchester-Simmons Co., Oakland City, Atlanta, Ga., manufacturer of screens, etc., has awarded contract to the Massell Construction Co., Atlanta, for a three-story addition, to cost $125,000.

The Common Council, Blackstone, Va., is planning for the installation of pumping machinery and power equipment for waterworks service.

The King George County School Board, King George, Va., is planning the installation of an electric light and power plant for local school service.

Charles L. Cunningham & Co., 20-30 South Garrison Lane, Baltimore, manufacturers of window screens, etc., will install 700 hp. in motors at their plant.

Buffalo

BUFFALO, July 2.

PLANS are being considered by the Genesee Bridge Co., 666 Plymouth Avenue, Rochester, N. Y., for a structural steel and iron works to cost approximately $60,000.

The International Paper Co., 30 Broad Street, New York, has plans for a one-story addition to its pulp and paper mill at Niagara Falls, N. Y., 80 x 160 ft.

E. W. Sandberg, Andover, N. Y., is planning the establishment of works to manufacture commercial automobile bodies, primarily for motor trucks.

Fire, June 25, destroyed a portion of the plant of the Carthage Sulphite Pulp & Paper Co., Carthage, N. Y., with loss estimated at $200,000, including equipment. It is planned to rebuild.

The Little Falls Fibre Co., Little Falls, N. Y., is planning the construction of a new two-story factory at its Cohoes, N. Y., works, to be 60 x 140 ft., estimated to cost $175,000 with machinery.

Spencer, Kellogg & Sons, Inc., Niagara Square, Buffalo, operating an oil refinery at 1317 Elk Street, is disposing of a bond issue of $2,500,000, a portion of the proceeds to be used for extensions.

The Hornell Electric Co., 30 Canastota Street, Hornell, N. Y., will make extensions in its electric power plants at Hornellsville and Dansville, N. Y., and install additional equipment.

The Vacuum Oil Co., Exchange Street, Rochester, N. Y., will commence the construction of a new power house at Olean, N. Y., to cost about $95,000.

The Seaburg Mfg. Co., Steele Street, Jamestown, N. Y., is considering the installation of additional equipment at its woodworking plant, including sanders, power equipment, etc. V. B. Seaburg is head.

The Cinder Products Co., 832 St. Paul Street, Rochester, N. Y., is planning the installation of machinery and power equipment in a plant at Binghamton, N. Y., for the manufacture of brick. It is also proposed to install similar works at Jersey City, N. J.

The Buffalo General Electric Co., Electric Building, Buffalo, will soon take bids for a service works, machine shop and parts department at 990 Niagara Street, to be two-stories, 120 x 200 ft., estimated to cost $100,000 with equipment.

The C. A. Buffington Mfg. Co., Owego, N. Y., is planning the installation of equipment in a building to manufacture metal-bound folding chairs and similar specialties. R. G. Geller is one of the heads of the company.

The F. Hayes Co., Mill Street, Canastota, N. Y., operating a forge shop, is considering the installation of power machinery and other equipment.

W. N. Gokey, 1025 Washington Street, Jamestown, N. Y., is planning for the installation of a machine and repair shop in the new service works to be established for Studebaker automobiles.

Detroit

DETROIT, July 2.

CONTRACT has been awarded by the Lloyd Mfg. Co., North State Street, Menominee, Mich., manufacturer of children's vehicles and parts, to the H. J. Selmer Co., Green Bay, Wis., for a three-story addition, 70 x 400 ft., to cost about $75,000.

The Consumers' Power Co., Jackson, Mich., is disposing of a bond issue of $3,500,000, a portion of the proceeds to be used for extensions and improvements.

The C. G. Spring Co., Kalamazoo, Mich., manufacturer of automobile springs, has commenced the erection of two one-story additions, each 40 x 75 ft. One of the structures will be used as a steel-enameling department.

The Delta Chemical & Iron Co., Wells, Mich., is planning the installation of a lathe, shaper and other tools in its machine shop. The purchase of a steam-operated hammer, about 600 lb. capacity, second-hand, is also contemplated.

Fire, June 18, destroyed a portion of the plant of the Scott & Howe Lumber Co., Ironwood, Mich., with loss estimated at $80,000, including planing mill machinery, transmission and other equipment. It is planned to rebuild.

The Marinette & Menominee Paper Co., Riverside Avenue, Marinette, Wis., has tentative plans for a new two-story paper and pulp mill in the vicinity of Menominee, Mich., estimated to cost $125,000 with machinery.

The Economy Baler Co., 1254 North Main Street, Ann Arbor, Mich., is considering the erection of a one-story addition, 60 x 100 ft. W. G. Langford is head.

The Excello Tool & Mfg. Co., 1214 Beaubien Street, Detroit, specializing in the production of high-speed grinding spindles, has leased a portion of the building at Helen Avenue and East Grand Boulevard, totaling about 18,000 sq. ft., for a new plant. It is proposed to remove to the new location.

The Lincoln Motor Co., West Warren Street, Detroit, is arranging for the early installation of equipment in its addition now nearing completion, one-story, 250 x 1250 ft.

The Mueller Furniture Co., Grand Rapids, Mich., will commence the erection of a five-story addition to its plant.

The Mohawk Mining Co., Calumet, Mich., has commenced the erection of an addition to its milling plant, and will install new regrinding machinery, tables, power and other machinery.

Cleveland

CLEVELAND, July 2.

MACHINE tool business as a whole is holding up well for this season of the year. Buying is confined largely to single machines, but orders continue to come out in good volume and some of the dealers did more business in June than in May. During the week the Ford Plate Glass Co. and the Toledo Machine & Tool Co., Toledo, each purchased several machines. Some scattered single tool inquiry is coming from the railroads. No purchases have been made by the Nickel Plate Railroad against its recent list. Among new inquiries is one for 10 machines and another for six. The quantity of used machinery offered has increased owing to the recent purchases by dealers of the equipment of two or three Ohio plants.

The stockholders of the Defiance Machine Works, Defiance, Ohio, have adopted the refinancing and reorganization plan recently approved by the Federal Court. It provides for the issuance of $600,000 in bonds to pay outstanding indebtedness and to provide working capital. The following new directors were elected: S. O. Richardson, Jr., Libbey Glass Co., Toledo; Henry L. Thompson, president Bostwick Braun Co., Toledo, hardware jobbers; Charles E. Bunting, president Bunting Brass & Bronze Co., Toledo; Edward S. Marshall, Toledo, attorney; E. M. Hummer, receiver of the Defiance Machine Works; R. Carle May, and A. G. Caris, Defiance.

The Vig-Tor Axle Co., which recently acquired the plant of the Forest City Machine & Forge Co., Cleveland, is equipping it for the manufacture of automobile axles and expects to begin operations in about two weeks.

The Bernhard Boiler Co., Lima, Ohio, formerly located in Elyria, Ohio, has completed the equipment of its plant which is now under operation. J. P. Bernhard is president.

The Union Chain & Mfg. Co., Sandusky, Ohio, is in the market for the following equipment: A power press, equivalent to No. 21½ Bliss, with 3 in. stroke; also one equivalent

to No. 77½ Bliss, with 5 in. or 6 in. stroke; tool room lathe, 18 in. x 8 ft.; geared crank shaper, 24 in.; No. 2½ universal milling machine; No. 1 Norton universal tool and cutter grinder, and a radial drill press of capacity to take 2 in. drill.

Cincinnati

CINCINNATI, July 2.

WHILE buying of machine tools has fallen off somewhat, orders booked in June will make a fair volume. Several important railroad lists were closed that month which has helped to swell bookings. During the past week orders were mostly for single machines, but a number of fair sized sales was also reported. A Mississippi railroad serving a lumber region, bought six engine lathes, a crank planer, a boring mill and a radial drill to replace equipment recently destroyed by fire. The Joyce-Cridland Co., Dayton, bought against its recent list, and the Delco Light, Dayton, also was a purchaser of a number of small tools. Several sales of press brakes were reported by manufacturers in this district.

The Seaboard Air Line Railroad has issued a list of equipment including punching and shearing machinery, bushing presses, woodworking machinery, foundry equipment and air compressors. The Panama Canal Commission is inquiring for two milling machines and one planer.

Inquiries continue to come out in fair volume. The Canadian National Railways will close bids today on three engine lathes, three shapers and one radial drill. The Pennsylvania Railroad has an inquiry out for four punches and shears, and the Santa Fe is inquiring for a number of tools in addition to those placed last week. The Harbor Commissioners of Montreal have also issued an inquiry for machine tool equipment, and the Public Service Gas Corporation, Philadelphia, wants three engine lathes. The General Electric Co. is taking bids on miscellaneous equipment, also the Westinghouse Electric & Mfg. Co. for its transformer plant at Sharon. The Standard Seamless Tube Co., Pittsburgh, is expected to buy a number of tools shortly. It is reported that action on the Denver & Rio Grande Western, the Burlington and Pere Marquette lists has been postponed for a few weeks.

The Standard Sanitary Mfg. Co., Louisville, Ky., has awarded contract for a foundry and an enameling building, to cost $100,000. Work will start at once.

The Foster Stove Co., Ironton, Ohio, has awarded contract for an addition to its plant and work will be pushed so that it will be ready for occupancy about Aug. 15. Additional foundry equipment will be required.

Contracts will shortly be let for the erection of a plant for the Stiegelmeyer Mfg. Co., Seymour, Ind., manufacturer of automatic train control devices.

The Union Gas & Electric Co., Cincinnati, will build a transformer station on Jackson Street, contract having been let for the work.

Milwaukee

MILWAUKEE, July 2.

WHILE the first two weeks in June were less active in sales of machine tools than the average in May, business in the last half improved so much that the June average was brought up to about equal the previous month. Prospects for July business are considered favorable. Sales at present show railroad demand predominating, with the automotive industries manifesting greater interest once more. Locally, manufacturers of parts and units continue to buy new equipment, both for replacements and to bring about moderate increases in output. Foundry and machine shop operations in June represented a slight depreciation from the May average, but this is ascribed mostly to labor shortage.

The deep well pump department at Chippewa Falls, Wis., of the Western Pump Co., Davenport, Iowa, has been obliged to install a night shift to bring production nearer demand. The Western company acquired the entire interests of the Chippewa Pump Co. in March to round out its line of shallow well pumping equipment. No extension of the Chippewa plant is in immediate prospect, but it is believed likely that some additions to production equipment will be necessary before the end of summer.

Plans for a $500,000 terminal improvement to be made by the Chicago & North Western Railroad Co. at Madison, Wis., have been revealed by B. R. Kulp, division engineer, with the commencement of work in filling a large tract of marshland. Construction probably will begin about Oct. 1, and will include a general machine shop, 75 x 120 ft.; a steam generating plant with 500-hp. capacity; a 100-ft. cinder pit with electric hoist; a 24-stall roundhouse to replace the present 8-stall house; a "95-through" turntable; a 200-ton coal house, and a 75,000-gal. water reservoir.

The Connecting Link Mining Co., Cuba City, Wis., is taking bids on the construction and equipment of a new seven-cell jig mill costing $25,000 as the first step in replacing its mining and milling plant and power house, which were seriously damaged by fire June 11.

H. H. Mueller, Baraboo, Wis., has engaged Edward Tough, architect, Madison, Wis., to design a two-story garage and service building, 65 x 85 ft., of brick and steel construction, estimated to cost $25,000 complete. Bids will be taken after July 15.

The Chicago & North Western Railroad Co. has been granted a permit by the city of Milwaukee to construct a new coal hopper at the foot of Corcoran Street, to cost $35,000.

The Frankenburg Refrigerating Machinery Co., Milwaukee, has been organized with $50,000 capital to manufacture refrigerators, refrigerating machinery, etc. The identity of the principals is withheld, as are definite plans. Incorporators are Bernard V. Brady, G. A. Gessnert and A. G. Bouchard, associated attorneys, 97 Wisconsin Street, Milwaukee.

The Board of Education, Mineral Point, Wis., has engaged Edward Tough, Madison, Wis., as architect in charge of a new $200,000 high school. Provision will be made for vocational training departments.

Perry E. Haworth, Chicago, has bid in the property of the defunct Washkosh Mfg. Co., Oshkosh, Wis., manufacturer of domestic washing machines, and plans immediate resumption of production under the direction of Theodore Engelke, who was general superintendent for three years prior to the bankruptcy litigation. The factory now occupies leased quarters but Mr. Haworth plans the erection of a new building upon expiration of lease on May 1, 1924.

Chicago

CHICAGO, July 2.

THE few dealers who shared largely in recent railroad orders made excellent sales records for June, but for Chicago machine tool houses as a whole, the month was a poor one. This is explained by the sharp decline in purchases by industrial companies and other miscellaneous users. Here and there individual machines continue to be sold to perfect present manufacturing equipment, but practically no buying is being done for factory additions or new plants. No new railroad purchases are reported, although action on the Denver & Rio Grande Western list is imminent. The Elgin, Joliet & Eastern lists may also be closed soon, but the Burlington inquiry will probably not be disposed of for some time. The lack of interest in new equipment outside of railroad circles is perplexing in view of sustained industrial activity. The Cicero, Ill., Board of Education has purchased five engine lathes and a shaper in addition to the four lathes and the planer which was reported purchased a week ago.

The Electric Box & Switchboard Co., Inc., 564 West Monroe Street, Chicago, recently organized, took over the business of the Electric Steel Box Co., and added a switchboard department. The company now manufactures steel boxes for electrical work, switchboards and panel boards, and is not in need of new factory equipment at this time. Officers are H. L. Johnson, president; E. J. Lang, vice-president; and George Meyer, Jr., secretary-treasurer.

The Consolidated Purchasing Agency of the American Short Line Railroad Association, McCormick Building, Chicago, is in the market for the following used equipment: Three pile drivers, three General Electric gas-electric railroad motor cars, and four hydraulic wheel presses, 200 to 300 tons capacity.

The Iowa Foundry Co., Sioux City, Iowa, is erecting two additions, 55 x 55 ft. each, and new office quarters, 25 x 35 ft., giving the company a total ground space of 60 x 160 ft.

The directors of the American Sash Weight Foundry Co., Davenport, Iowa, have authorized the officers of the company

to exercise an option to purchase the foundry formerly owned by the Sears Tire & Equipment Co., on West Second Street.

The Fiber Conduit Co., Orangeburg, Ky., has purchased a 32-acre tract in Richmond, Ind., and has let contracts for two buildings to cost $200,000.

The Secretary of State of Illinois will receive bids July 5, on alterations and the construction of an addition to the State power plant on the Capitol grounds, Springfield, Ill.

The Elgin, Joliet & Eastern Railroad will build a car repair shop at Joliet, Ill., to replace the buildings recently destroyed by fire. It will be 300 x 500 ft. and will cost $500,000.

F. K. North, 1801 Diversey Parkway, Chicago, is inquiring for a Warner & Swasey gate valve seating machine in first-class condition.

The Donahue Steel Products Co., 204-8 North Jefferson Street, Chicago, is in the market for single and double end punches, threading machines, hammers, cold headers and thread rollers.

Indiana

INDIANAPOLIS, July 2.

TENTATIVE plans are being considered by the George Cutter Mfg. Co., 401 North Notre Dame Avenue, South Bend, Ind., manufacturer of electric lighting equipment, for a one or two-story addition. The company is operated by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

The Interstate Public Service Co., Warsaw, Ind., will build a new electrically-operated pumping plant to cost about $100,000.

W. L. Huffman, Elkhart, Ind., is planning the establishment of a new plant in another city for the manufacture of axles for motor trucks and will require new equipment.

Graham Brothers, Inc., Evansville, Ind., manufacturer of motor trucks has preliminary plans for a new unit to cost about $50,000. Russ & Karges, Furniture Building, are architects.

The Monroe Motors Corporation, Indianapolis, has been organized by officials of the Premier Motor Car Co., Olney Street and the Belt Railroad, to manufacture the Monroe automobile. The new company has acquired the rights of production from the Strattan Motors Corporation, which some months ago purchased the old Monroe motor car plant on Eleventh Street, and which will occupy the factory for the manufacture of Strattan automobiles. The new Monroe organization has leased a portion of the Premier plant and will install equipment. Fred L. Barrows, president Premier company, will also head the Monroe Motors Corporation, of which Berkeley Orr has been elected treasurer, and G. C. Patrick, engineer.

The Terre Haute, Indianapolis & Eastern Traction Co., Indianapolis, is perfecting plans for an addition to its generating plant on West Tenth Street, and the installation of new equipment.

The Indianapolis Pump & Tube Co., Kentucky Avenue and Drover Street, Indianapolis, has commenced the erection of a new plant at Greenwood, Ind. The present works will be removed to the new location later.

A power plant will be at the new sanitarium at Crown Point, Ind., estimated to cost $350,000, for which bids will be received on a general contract until Aug. 1. The Board of County Commissioners, Crown Point, is in charge. Karl D. Morris, Calumet Building, East Chicago, Ind., is architect.

Manual training equipment will be installed in the new consolidated high school to be erected at Miami, Ind., estimated to cost $100,000. The Bass & Knowlton Co., Hume-Mansur Building, Indianapolis, is architect.

The factory property of the Puritan Bed Springs Co., Indianapolis, along the White River, 100 x 500 ft., has been condemned for acquisition by the city. The company will seek a new site and remove its works in the near future. It is said that plans for enlargement are under consideration.

The Forse Machine Co., Anderson, Ind., has taken over property at Fourteenth and Fairview Streets, and will operate a plant for the manufacture of die-castings. W. H. Forse, Jr., is head.

Electric and steam power equipment, transmission machinery, conveying and other equipment will be installed in the three-story addition to be erected by the Progress Laundry Co., 420 East Market Street, Indianapolis, estimated to cost $110,000. Roy C. Shaneberger is president.

The McCord Spring Wheel Co., Alpha, Iron County, Mich., has been organized to manufacture automobile wheels. A small contract has been let, but unless plans are changed the company will do its own manufacturing. H. J. Veeser is treasurer.

The Gulf States

BIRMINGHAM, July 2.

PLANS are being arranged by the Valley Electric & Ice Co., Harlingen, Tex., for a new central power plant for service in the lower Rio Grande Valley. The initial installation will consist of two Diesel engines, oil-operated, generators, switchboard and auxiliary equipment. C. G. Mallot is head.

The Trinity & Brazos Valley Railway Co., Houston, Tex., has approved plans for additions to the car and locomotive repair shops at Teague, Tex., to cost $80,000 with equipment.

J. G. Leinecker, Sanford, Fla., has inquiries out for two double bolt cutters, 2-in. and 3-in. capacity, respectively, second-hand.

Ovens, power equipment, conveying and other machinery will be installed in the new seven-story and basement plant to be erected by the Brown Cracker & Candy Co., McKinney and Jefferson Streets, Dallas, Tex., estimated to cost $1,000,000, for which bids will be asked at once on a general contract. C. E. Barglebaugh & Co., Medical Art Building, are architects and engineers.

The Common Council, Hubbard, Tex., is planning the installation of electrically-operated pumping machinery at the municipal waterworks. Bonds for $55,000 are being arranged.

Sutton, Steele & Steele, Inc., 4215 Gurley Street, Dallas, Tex., manufacturer of ore machinery, concentrating equipment, etc., has filed plans for a new factory to cost $25,000, exclusive of machinery.

The Florida Nu-Tex Brick Co., Tampa, Fla., is planning the construction of a new plant in the vicinity of Miami, Fla., for the manufacture of concrete brick, etc. A power house will also be installed. The works will cost more than $50,000 with machinery. B. C. Cohn, Tampa, is one of the heads of the company.

The South West Portland Cement Co., Two Republics Building, El Paso, Tex., will take bids early in the fall for its plant on site recently acquired near Fort Worth, Tex. A power house and machine shop will be built. The works will cost approximately $500,000 with machinery. O. J. Binford is company engineer.

The Houston Lighting & Power Co., Houston, Tex., will use about $2,500,000 of its improvement fund of $4,500,000, recently arranged, for the construction of a new electric generating plant, for which plans will be drawn in the near future.

The Rockdale, Sandow & Southern Railroad Co., Rockdale, Tex., recently organized, is considering the erection of locomotive and car repair shops in connection with its proposed new line from Majorie to Sandow, Tex., and vicinity. E. A. and E. M. Camp, and J. T. Hale, all of Rockdale, head the company.

The Arab Gasoline Corporation, Eastland, Tex., has tentative plans for a new gasoline refinery near Eastland, estimated to cost $400,000 including machinery. Horace Butler is vice-president.

The Common Council, Vicksburg, Miss., is planning the installation of a number of electrically-operated pumping plants in connection with a land drainage and reclamation project on the waterfront. Miller-Butterworth Co., Southern Trust Building, Little Rock, Ark., is engineer.

The Roseland Veneer & Package Co., Roseland, La., is planning for extensions and improvements in its power house, including the installation of additional equipment. An addition will also be built to the saw mill and equipment installed.

The United States Export Chemical Co., Tampa, Fla., has been organized with a capital of $2,350,000, to build a commercial fertilizer and phosphate plant in the vicinity of Tampa, originally projected by the Chemical Construction Co., Charlotte, N. C., of which the president, Peter S. Gilchrist, will be chairman of the board of the new corporation. The initial mill will include a power house, pumping plant, machine shop and other buildings, and will cost $1,000,000 with machinery. Equipment will also be installed for phosphate production on land acquired at Plant City, Dover and Sidney, Fla. William Schneider, Plant City, is interested in the new company.

The Humble Oil Co., Corsicana, Tex., is planning the construction of an electrically-operated pumping plant at its property in the Beaton section, near Corsicana.

Manual training equipment will be installed in the new high school to be erected at Tuscaloosa, Ala., for which bonds of $250,000 have been voted. The Board of Education will soon select an architect.

The Sinclair Refining Co., 45 Nassau Street, New York, is perfecting plans for enlargements in its refinery at Houston, Tex., and purposes to more than triple the present

output of 8000 bbl. per day. It will cost in excess of $450,000 with machinery.

The Public Service Commission, Alabama, has denied permission to the Alabama Power Co., Birmingham, for its proposed hydroelectric generating plant on the Warrior River, near Tuscaloosa, Ala., to cost in excess of $600,000, and the project will be held in abeyance pending the selection of another site.

A machine shop and parts department will be installed in the new three-story service building, 100 x 176 ft., to be constructed by the L. D. Shackleford Motor Co., Miami, Fla., on Thirty-eighth Street, estimated to cost $125,000, including equipment.

The Central South

ST. LOUIS, July 2.

PLANS are being considered by the Kansas City Refining Co., Second and Troy Streets, Kansas City, Kan., for the erection of an addition to its refinery, to cost about $100,000, including equipment. E. W. Goebell is manager.

The Century Electric Co., 1827 Pine Street, St. Louis, manufacturer of fans, motors, etc., is planning the construction of an addition and improvements in the present plant, to cost $400,000, with equipment.

The Electrical Appliance Co., 16 East First Street, Hutchinson, Kan., is planning for the installation of a lathe, emery wheel and stand, and other equipment. H. E. Davis is one of the heads of the company.

The Wood & Lane Co., 915 Olive Street, St. Louis, machinery dealer, has inquiries out for a 1500-kw. horizontal turbine, direct-connected to a 2300-volt generator, with surface condenser and other auxiliary power equipment; also for one 1000 kva. turbo-generator set, 2300 volts, complete with surface condenser, etc.; and for one 1000 kva., 2300-volt generator, direct-connected to a simple Corliss engine, with auxiliary equipment.

The Tennessee Electric Power Co., Lenoir City, Tenn., has acquired the local light and power plant, heretofore operated by R. M. Galloway, and plans for extensive additions, including the installation of new equipment.

A manual training department will be installed in the new two-story school to be erected at Millington, Tenn., for negro students, to cost about $75,000. Mahan & Broadwell, Memphis, Tenn., are architects.

A two-story and basement automobile service and machine shop, storage and warehouse, 300 x 500 ft., to cost $200,000, will be erected by the Famous Barr Co., Sixth and Olive Streets, St. Louis, operating a department store, for company trucks and cars.

The Fairfax Drainage District, Henry Reimer, chairman, 501 Federal Reserve Life Insurance Building, Kansas City, Kan., will install electrically-operated centrifugal pumps and auxiliary electrical equipment in connection with its new drainage works. A power house and electric transformer station will also be built. Horner & Wyatt, 306 McMillen Building, are consulting engineers.

The Ironton Stove & Mfg. Co., Ashland, Ky., is planning the erection of an addition. A portion of the structure will be used as a foundry and the remainder for an enameling works. The company recently increased its capital for expansion.

The Derby Oil & Refining Co., Wichita, Kan., has work under way on a second unit at its refinery, with capacity of 1200 bbl. a day, increasing the output to 6000 bbl. daily. It will cost in excess of $200,000, including equipment.

The Duncan Machinery Co., Dempster Building, Knoxville, Tenn., has inquiries out for a 50-ton steel derrick, 115 ft. mast and 100 ft. boom; also for a 10 to 15-ton stiff leg derrick, mounted on skids. The company is also in the market for a 2000-cu. ft. air compressor, electric-driven, second-hand.

J. W. Savoy, Sterling, Kan., operating a machine shop, is planning the installation of a power lathe, emery wheel and stand, and other equipment.

Bids will soon be called by Russel & Axon, 404 McDaniel Building, Springfield, Mo., consulting engineers, for a hydroelectric power plant on the Sac River, near Stockton, Mo., to cost $50,000. It will be operated for city service by G. B. Seward, Stockton, and associates, who are forming a company.

A. C. Parsons, superintendent of schools, Oklahoma City, Okla., is planning the installation of vocational shops in a number of city schools, to be equipped for machine shop, electrical and other instruction. C. W. Briles, State director of education, has authorized the expansion.

The Arkansas Light & Power Co., Arkadelphia, Ark., will make extensions and improvements in its power plant and system at Camden, Ark., to cost $100,000, including equipment. H. C. Couch is president.

Hugh Stephens, Trust Co. Building, Jefferson City, Mo., will install a machine shop in the new two-story building, 55 x 90 ft., estimated to cost $25,000.

The Sante Fe Oil & Refining Co., Ardmore, Okla., operating at the former refinery of the Chickasaw Refining Co., will commence the erection of an addition and install new process stills, refining and power equipment, estimated to cost $300,000.

The Continental Paper & Bag Mills, Inc., 16 East Fortieth Street, New York, has leased a building at Twelfth and Mulberry Streets, Kansas City, Mo., for a new plant to manufacture paper products.

The power plant of the Rogersville Electric Co., Rogersville, Tenn., has been leased by the Kitzmiller-Kenner Co., Rogersville. Plans are under way for the installation of a new steam-operated electric unit for increased output.

The Oliver Oil-Gas Burner & Machine Co., St. Louis, has leased a building at Seventh and Market Streets, and will install machinery for the manufacture of oil burners, gas-burning equipment, etc.

The American Crushed Rock Co., Thirty-sixth Street and Rainbow Avenue, Kansas City, Mo., is planning the installation of steam power equipment, drilling and other machinery.

The Chickasha Cotton Oil Co., office of general superintendent, Chickasha, Okla., is inquiring for a 550 to 700 hp. cross-compound Corliss engine, with or without condenser.

The Pacific Coast

SAN FRANCISCO, June 26.

BIDS will be called within 30 to 60 days by the Atchison, Topeka & Santa Fe Railway Co., Kerckhoff Building, Los Angeles, for the construction of new boiler and erecting shops at San Bernardino, Cal., to cost about $350,000. R. B. Ball is chief engineer.

The General Petroleum Co., Los Angeles, has preliminary plans for a new oil storage and distributing plant on Terminal Island, San Pedro Harbor, to cost $1,250,000 with equipment. The company will also build a similar plant at Compton, near Los Angeles, where a 30-acre site has been purchased at Central Avenue and 128th Street, to have a capacity of 2,000,000 bbl.

The Utah Power & Light Co., Salt Lake City, Utah, is planning for a new hydroelectric power house on the Green River, near the Utah-Wyoming boundary, with initial capacity of about 60,000 hp., to cost $6,000,000, including steel tower transmission system.

The Grand Rapids Show Case Co., Grand Rapids, Mich., has purchased property in the Brooklyn district, Portland, Ore., between Twenty-second and Twenty-sixth Streets, and has authorized plans for a main three-story building, power house, machine shop and other structures, to cost approximately $150,000. Plans will be completed in the fall.

The Northwestern Electric Co., Vancouver, Wash., will commence the construction of an addition to its power house at Eighth and King Streets, estimated to cost $85,000.

The Williams Brothers Aircraft Co., 124 Van Ness Avenue, San Francisco, will soon call for bids for a new plant to manufacture airplanes and parts to cost about $30,000. R. R. Irvine, 736 Call Building, is architect.

The Ontario Motor Products Co., Ontario, Cal., care of the Chamber of Commerce, has completed arrangements for a local site, fronting on the line of the Southern Pacific Railroad, and will have plans drawn for new works to manufacture automobile equipment and to cost $50,000 with machinery. The company is now operating a plant at El Paso, Tex., and will remove the works to the Ontario site.

A one-story power house, 45 x 75 ft., will be erected by the Pacific Sash & Door Co., 3216 South Main Street, Los Angeles, in connection with other extensions. Noice & Merrill, 1326 Washington Building, are engineers.

The C. L. Best Tractor Co., San Leandro, Cal., manufacturer of farm tractors and parts, is disposing of a note issue of $600,000, a portion of the proceeds to be used for expansion. C. L. Best is president.

Electrically-operated pumping machinery will be installed in the proposed municipal water plant to be erected by the Common Council, Roseburg, Ore. Bonds for $35,000 have been approved for the installation.

The Western Sheet Glass Co., Torrance, Cal., recently organized to take over the plant and business of the Torrance Glass Co., has plans for extensions to cost approximately $1,000,000. A department will be equipped for the manufacture of wire glass. Adolph Sieroty is head.

W. T. Harrison, 861 East Taylor Street, Portland, Ore.,

has plans for the erection of a two-story foundry and machine shop on Twenty-eighth Street.

Canada

TORONTO, July 2.

BUSINESS closed for machine tools in this market during June will show another record, according to local dealers and builders. Orders placed by the Toronto Transportation Commission, the Riverdale Technical School in Toronto and the technical school at Guelph, Ont., helped to swell bookings for the month. At present a brisk demand is reported for practically all classes of tools, machinery and equipment. The electrical trades are taking large quantities of equipment, and a good demand for machinery is reported from mining fields throughout the Dominion. The pulp and paper industry is also an active buyer.

W. H. Bamfield & Sons, Ltd., Pape Avenue, Toronto, is making improvements to its plant, and will install second-hand chilled iron rolls for rolling hot rolled steel. Other improvements are also proposed.

The Buck Stove Co., Brantford, Ont., will build an extension and install additional equipment for increasing its output of furnaces.

It is reported that contracts for machinery and equipment for the new drydock under construction at Esquimalt, B. C., for the Federal Government have not yet been awarded.

The Canadian Farm Implement Co., Medicine Hat, Alta., has taken over the business of the Alberta Foundry & Machine Co., at a cost of about $500,000. John E. Davies is president of the new concern.

Percy Owen, who has been manufacturing files in Detroit, is contemplating establishing a manufacturing plant in Windsor, Ont.

The wind and electric storm which passed over this district the early part of last week caused considerable damage to the plants of the International Iron Works and the Gibson Mfg. Co., at Guelph, Ont., and the plant of the Gummed Paper Co., Brampton, Ont., was damaged to the extent of about $80,000.

The recent fire at the plant of the Asbestos Corporation of Canada, Ltd., Thedford Mines, Que., caused damage to the extent of $400,000 to the buildings and $250,000 to the equipment and contents. The company intends to rebuild.

Tenders are in and will be awarded at an early date for the construction of an addition to the plant of the Howard Smith Paper Mills, Cornwall, Ont.

The Canadian Westinghouse Co., Hamilton, Ont., has called for bids for an addition to its plant to cost $1,200,000.

The plant, equipment and products of the plant of the Canadian Industrial Alcohol Co., Corbyville, Ont., were recently destroyed by fire with a loss of about $2,000,000.

The Garden City Paper Co., Merriton, Ont., is contemplating erecting a paper mill at St. Catherines, Ont., to cost $400,000. L. H. Gardiner is president.

The mill of the Powassan Sash & Door Factory at Powassan, Ont., was destroyed by fire June 24 with a loss estimated at $40,000.

The Macdonald Wire Goods Co., Ltd., Drummondsville, Que., is in the market for a butt welder equal to Federal 2-A, also ⅝ in. automatic wire cutter and straightener. It also is inquiring for a four-slide wire forming machine and other wire working machinery.

Power Equipment Orders

The record of recent power equipment orders makes an impressive showing, in part as follows:

Washington Gas & Electric Co., Washington Court House, Ohio, Westinghouse underfeed stoker for a 504 hp. Heine boiler.

Appalachian Power Co., Glen Lyn, Va., Westinghouse underfeed stoker and a 1232-hp. Babcock & Wilcox boiler.

Carnegie Steel Co. Westinghouse underfeed stokers for its Mingo, Ohio, plant for two 1000-hp. boilers.

Virginian Power Co., Maxwell, Va., two 850-hp. Babcock & Wilcox boilers and two Westinghouse underfeed stokers.

City of Decatur, Ind., two 398-hp. Babcock & Wilcox boilers with Westinghouse underfeed stokers.

Keystone Glue Co., West Williamsport, Pa., three 400-hp. Keeler boilers with Westinghouse stokers.

Carnegie Steel Co., for Homestead, Pa., eight 834-hp. Stirling boilers with Westinghouse stokers.

Washburn Wire Co., New York, two 720-hp. fire-tube Springfield boilers with Westinghouse underfeed stokers.

Vacuum Oil Co., for Olean, N. Y., four Westinghouse stokers and four 763-hp. Babcock & Wilcox boilers.

Pennsylvania Railroad Westinghouse stokers for Altoona shops and two Heine 500-hp. boilers.

Brooklyn Edison Co., six Westinghouse underfeed stokers for its Bay Ridge plant.

Consolidated Water Power & Paper Co., Biron, Wis., Westinghouse stoker.

Northern States Power Co., extra long Westinghouse stokers for its St. Paul plant.

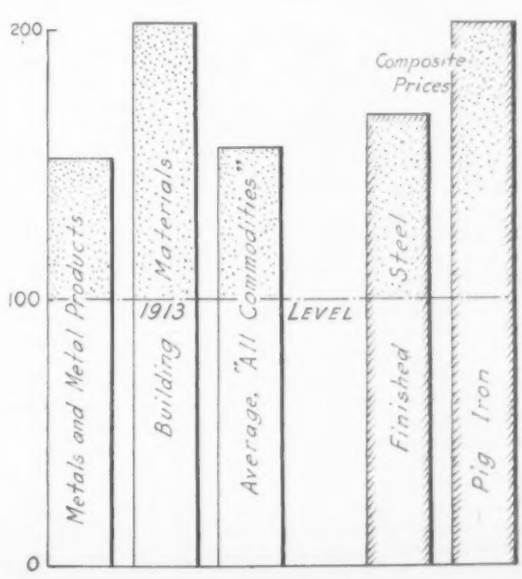
Wholesale Prices Lower in May Than in April

All Items Share in Decline, Except Food and Furniture, Which Are Stationary

FIGURES of the Bureau of Labor Statistics, Washington, show a drop of 3 per cent in commodity prices in May, compared with April. Except for fuel and lighting, all items are higher now than a year ago, the average increase being 5.4 per cent.

Compared with this, the composite price of finished steel has advanced 32.2 per cent within the year, and of pig iron, 27.4 per cent. One year ago the composite pig iron price was 7.4 per cent above the "all commodity" figure, while finished steel was 14.2 per cent below "all commodities."

In the chart are shown the May relative prices of all commodities, building materials and metals, from the Labor Bureau's figures, alongside the composite prices of finished steel and of pig iron, all referred to the 1913 average price as 100.



Index Numbers of Wholesale Prices, by Groups of Commodities
(1913 equals 100)

	1920 Peak	1922 May	1923 April	1923 May	Advance in One Year, Per Cent
Farm products	247	132	141	139	5.3
Foods	248	138	144	144	4.3
Cloths and clothing	346	175	205	201	14.9
Fuel and lighting	281	216	200	190	—12.0
Metals and metal products	203	119	154	152	27.7
Building materials	300	160	204	202	26.3
Chemicals and drugs	213	122	136	134	9.8
Housefurnishings	275	176	187	187	6.3
Miscellaneous	208	116	126	125	7.8
All commodities	247	148	159	156	5.4

Plans of New Companies

Weeks-Merit-System, Inc., 228 Aborn Street, Providence, R. I., has been incorporated as successor to S. S. Weeks, who for the past four years has represented the Associated Engineering & Supply Co. of San Francisco as eastern distributor of the Merit automatic oil stoking system. Mr. Weeks will be president of the new corporation. The company is now manufacturing Merit System devices of new design only, the standard design being furnished for the present by the Westinghouse Pacific Coast Brake Co. The new company is enlarging its machine shop and eventually will manufacture all apparatus sold in this territory. The company can furnish automatic fire and draft control for any make or type of oil burner with any type of boiler with either natural or forced draft. It also has an automatic control for pulverized coal burning boilers.

The McIlvaine Air-craft Corporation, Ancon, C. Z., has been organized to manufacture aircraft parts. Its operations are still in the experimental stage and it is unlikely that it will be on a production basis for many months. C. A. McIlvaine, executive secretary of the Panama Canal, is head of the company.

The Mule Battery Mfg. Co., care of Albert Setzer, 153 Wendell Street, Providence, R. I., has been organized to manufacture electric storage batteries and equipment. The company is fully equipped to cope with present requirements, its only need being for raw materials.

The Sanford Rubber Works, Inc., Salisbury, Conn., has been incorporated with capital stock of $50,000 to manufacture rubber products, having taken over an established business. Manufacturing equipment and machinery will be installed for volume production. The company is now planning a sectional steel building.

Vrabeck & Kessler, engineers, 149 Broadway, New York, have been appointed New York district representatives of the Champion Engineering Co., Kenton, Ohio, builder of electric traveling cranes, sluice gates, penstocks, automobile turntables, hydraulic machinery. J. W. Spensley, representative of the Champion company in New York for a number of years, recently resigned to devote more time to sales of domestic and industrial oil-burners with the Brooklyn Oil Burner Co., Brooklyn, of which he was an organizer. J. S. Vrabeck was sales manager of the Sturtevant Mill Co., Chicago, for seven years and prior to that with the sales staff of the Allis-Chalmers Mfg. Co. H. H. Kessler was formerly with the Atlas-Portland Cement Co. and later with the Hardinge Conical Mill Co. In addition to representing the Champion Engineering Co., Vrabeck & Kessler are also sales agents for the Stearns Conveyor Co. and the Stedman Foundry & Machine Works, Aurora, Ill., chemical and fertilizer machinery.

The Haletone Mfg. Co., New York, recently incorporated with capital stock of $100,000, will manufacture vacuum equipment and other apparatus. It is now only in a formative stage and will not be active for some time. Its offices will later be located at 1133 Broadway. A. Schirmann, 547 East Eighty-fourth Street, New York, is secretary.

The Lehman Sewer Pipe Co., 26 Court Street, Brooklyn, N. Y., has been incorporated with capital stock of $50,000 to take over a business already established to manufacture pipe and kindred products. The business will follow along the same lines with a few changes. The incorporators are Charles F. Lehman, E. A. Mellon and R. J. Lilly.

The Combination Electric Switch Corporation, New York, has been incorporated with capital stock of $100,000 to manufacture electrical switches and parts. It is not yet permanently located, but the company expects to be in production in the near future. All manufacturing will be done by contract. Address care of P. A. Zizelman, 42 Broadway, New York.

The Union Metal Products Co., care of Samuel J. Taylor, 320 Salziel Building, Oakland, Cal., has been incorporated with capital stock of $500,000 to manufacture metal goods. Plans are not sufficiently developed to take up the method of manufacturing as yet.

The Memphis Oxygen Co., Memphis, Tenn., has been incorporated with capital stock of $75,000, to manufacture industrial oxygen and kindred products. The company has acquired a business well established in this line with a factory now in production. Business will be continued along the same lines. C. H. Reynoll heads the company.

The Heyer Products Co., 3 Valley Road, Montclair, N. J., has been incorporated with capital of 2004 shares of stock, no par value, to manufacture battery charging and testing equipment and automotive electric testing equipment. Most of the equipment has already been placed. These machines have been made for the past two years in small quantities and the company expects to enlarge its capacity considerably. B. F. W. Heyer heads the company.

The Fallkill Radio & Electrical Co., 380 Mill Street, Poughkeepsie, N. Y., has been incorporated with capital stock of $50,000, as a consolidation of the partnership of the Fallkill Engineering Co., and the Fallkill Radio & Electrical Co. Its activities will consist in the continuation and expansion of the existing machine business, together with general manufacturing of radio products. J. A. Purcell is president.

The Lamer-Brocke Steel & Wire Works, Inc., Johnstown, Pa., has been incorporated with capital stock of $25,000 to manufacture steel products, wire goods, etc. Its plant will be located at Seward, Pa., where equipment is now being installed. The company has bought the factory of the Johnstown Dry Grains Co. at 315 Powers Street, Johnstown, and will operate there. William H. Strauss heads the company.

The National Projector Mfg. Co., Inc., care of La Via Patents Co. Inc., 527 Grand Street, Brooklyn, N. Y., has been organized to manufacture mechanical equipment. No definite plans will be outlined until further developments which will require about two months.

The Schnabel Co., care of Ralph L. Smith, 582 Union Arcade Building, Pittsburgh, is being organized to manufacture automobile equipment and parts. It will acquire and continue the business of a company which has been established for several years. W. M. Schnabel, 210 Beltzhoover Avenue, heads the company.

The Hyle Oil Burner Co., 9 East Lexington Street, Baltimore, has been incorporated with capital stock of $50,000 to manufacture oil burners and kindred equipment. Manufacturing will be done by contract, the company maintaining an assembling plant in Baltimore. L. M. Levering, Jr., is president.

The Atkinson Automatic Timer Co., Cynthiana, Ky., was recently incorporated with capital stock of $20,000 to manufacture automatic timers for automotive use. Manufacturing will be done by contract. C. L. Atkinson heads the company.

Trade Changes

The Pittsburgh office, Reading Iron Co., F. M. English, district sales manager, has been moved from Room 608 to Room 1505, First National Bank Building, Pittsburgh.

S. W. Platt & Co., scrap iron and steel, have moved from Room 813 to Room 607, First National Bank Building, Pittsburgh.

The Colson Co., Elyria, Ohio, manufacturer of silent wheel trucks for hospitals and hotels, invalid chairs and bicycles, has leased the five-story building at 223 West Larned Street, Detroit, to be utilized as a distributing warehouse.

J. E. Haetten & Co., 50 Church Street, New York, new and second-hand machine tools, has acquired the Backer Machine Tool Supply Co., 30 Church Street. Charles Backer is now associated with the Haetten company.

The General Refractories Co. announces the opening of a New England sales office at 200 Devonshire Street, Boston, M. C. Sargent in charge. Mr. Sargent was formerly with Waldo Bros. & Bond Co. of Boston.

The Horne Mfg. Co. has been bought out by the Horne Electric & Mfg. Co., which is continuing the manufacture of radio apparatus and supplies, marine apparatus and supplies and railway supplies.

Manning, Maxwell & Moore, Inc., 119 West Fortieth Street, New York, on July 1 will be located at Pershing Square Building, 100 East Forty-second Street, New York.

The McWane Cast Iron Pipe Co. has opened district offices for the Southwest and Mexico at Dallas, Tex., J. L. Hill in charge. Statement is made that the plant has operated steadily since it began March 1, 1922, and its business has expanded with equal steadiness.

The Foss Machinery Co., 305 St. James Street, Montreal, Canada, has been appointed exclusive representative of the Sundstrand toolroom, manufacturing and engine lathes in that territory.

The Matlack Coal & Iron Co., Inc., 44 Beaver Street, New York, has been appointed exclusive American sales agent for the sale of imported iron ore controlled by the N. V. Handels en Transport Maatschappy Vulcaan of Rotterdam.

The Orton & Steinbrenner Co., 608 South Dearborn Street, Chicago, locomotive cranes, dipper shovels and grab buckets, announces a reorganization and the election of the following officers: P. A. Orton, president and general manager; E. B. Ayers, vice-president; Herbert Mertz, secretary and sales manager; Harry Shaffer, treasurer. No change in management or control is contemplated. The work is being advanced rapidly in the construction of its new machine shop, which will approximately double the present capacity.

The Oliver Machinery Co., Grand Rapids, Mich., has made a contract with the Canadian Fairbanks Morse Co., Ltd., to represent it exclusively throughout the Dominion for the sale of its woodworking machinery and machine tools.

The Colonial Supply Co., Pittsburgh, has been appointed exclusive distributer for Western Pennsylvania for the Latrobe Tool Co., Latrobe, Pa., high-speed drills and reamers.

The Pryibil-Genzlinger Machine Co., metal spinning lathes, woodworking machinery and supplies, is now manufacturing in the factory at 22-26 Frost Street, Brooklyn, N. Y., and is in a position to make deliveries from stock. The company also manufactures all ball bearing wood-turning lathes. The members of the company were formerly executives of the P. Pryibil Machine Co., and considerable stock from that company has been purchased.

Elgin Motors, Inc., has succeeded to the business of the Elgin Motor Car Corporation formerly of Argo, Ill., and will manufacture the new Elgin car at 323 West Fifteenth Street, Indianapolis. J. H. McDuffee is president.

The Whiting Corporation, foundry equipment and railway specialties, Harvey, Ill., has opened a sales office at 1526 Jefferson County Bank Building, Birmingham, Ala. W. R. Hans in charge, to cover Alabama, Georgia, Tennessee and Northern Mississippi. Another office is being opened at 624 Penton Building, Cleveland. R. P. Dryer is in charge. This office will cover Ohio.

The Roller-Smith Co., 233 Broadway, New York, has appointed H. D. Baker, 525 Woodward Avenue, Detroit, as representative in Michigan, handling instruments, circuit breakers and radio apparatus. Mr. Baker has been associated with the company in various capacities for several years.

The West Coast Machiney Co., 1006 First Avenue South, Seattle, Wash., has been appointed representative of the Rockford Milling Machine Co., and the Rockford Tool Co. in this territory.

The Champion Engineering Co., Kenton, Ohio, builder of electric traveling cranes, caterpillar sluice gates and hydraulic machinery, has opened a sales office for the Chicago district at 431 South Dearborn Street, Chicago. W. B. McCracken, who has been in the operating department of the Champion company is in charge.

A completely equipped emergency service plant has been installed by the National Carbon Co., Cleveland, at the Arrott Building, Pittsburgh, where motor brushes, contacts, etc., can be secured on short notice. This is the third such plant to be installed in two years.

The Groner Co. Inc., has moved its business from Easton, Pa., to Phillipsburg, N. J., occupying the property formerly used by the Standard Process Steel Corporation. Increased facilities will expand its line to include gray iron, semi steel, brass, bronze and aluminum castings, machine work, and wood and metal patterns.

The Standard Inspection Co. has retained P. J. Freeman as consulting engineer and technical adviser on all contracts relating to concrete materials and construction, testing of power plants, pumping machinery, and special investigations. Mr. Freeman will occupy offices with the company at 311 Ross Street, Pittsburgh.

The Ott Gear Grinder Co., Detroit, has been incorporated with a capitalization of $25,000 for the purpose of manufacturing a new type of spur gear grinder. The company is operating at 6435 Benson Avenue, Detroit, and the following officers are actively engaged in the business: A. J. Ott, president; V. M. Ott, vice-president and Conrad L. Ott, secretary-treasurer.

Frazar & Co., exporters to the Far East, 30 Church Street, New York, have taken over the foreign business of Cowdrey & Winkhaus, which will be continued along the same lines as before. Loren M. Cowdrey has joined the Frazar organization and the business will be conducted under his supervision.

At a meeting of the directors of the Aultman & Taylor Machinery Co., Mansfield, Ohio, the following officers were elected; J. E. Brown, chairman of directors; J. U. Fogle, president; E. A. Harter, first vice-president; G. S. Heck, second vice-president and treasurer; B. Hurxthal, secretary.

The American Brass Co. has drawn the fires from its refinery department at Ansonia, Conn. Hereafter the work of this department will be done at the Perth Amboy, N. J., plant of the company. Space heretofore used for refining purposes at Ansonia will be utilized for other departments.

E. C. Atkins & Co., saw manufacturers, Indianapolis, Ind., have published a pocket-size booklet reprinting the constitution of the United States, which is being distributed to its customers and others gratuitously.

Industrial Financial Notes

The plant and other assets of the bankrupt Mitchell Motors Co., Inc., Racine, Wis., will be offered for sale at public auction at the plant on Wednesday, Aug 15, according to announcement made by Herbert F. Johnson, trustee. The report of the appraisers has been ordered filed not later than July 15. Schedules recently filed admit liabilities of approximately $4,000,000 while assets are nominally valued at $3,000,000.

At the first meeting of creditors of the Badger Metal Ware Co., Milwaukee, Ignatz Weiskopf was elected trustee. The second meeting will be held July 16. Schedules recently filed show liabilities of $35,000, with assets nominally valued at $83,000.

The Wheeling Steel Corporation has completed an $8,000,000 financing program to provide additional working capital to increase manufacturing capacity. The financing takes the form of three-year secured convertible 6 per cent notes dated July 1, next, which are convertible at any time at par, at option of the holder into first and refunding 5½ per cent, series A bonds. The new paper was sold to investors at $100 and interest.

The Keystone Steel & Wire Co., Peoria, Ill., showed a net income of $726,318 after depreciation and depletion for the ten months ended April 30, 1923. These earnings are greater than those of any entire fiscal year in the history of the company.

The New York Stock Exchange has approved the application of the Pressed Steel Car Co. to list $6,000,000 5 per cent 10-year bonds issued Dec. 30, 1922. The bonds are convertible into common stock, par for par, after Jan. 1, 1924. Since 1916 the policy of the company has been to provide for an average of 10 per cent per year for machinery and equipment and an average of 5 per cent for building repairs and construction.

The American Car & Foundry Co. reports for the year ended April 30, 1923, a balance after taxes, renewals, preferred dividends, etc., of $4,113,610, equal to $13.71 a share on common stock, as compared with a balance of $4,483,320, or $14.94 a share, in the preceding year. Profit and loss surplus stood at $36,673,498 as against $36,159,888, as of April 30, 1922. Net earnings were $6,213,610 against $6,583,320. The company begins its new year with an amount of business on its books considerably in excess of that at the beginning of the preceding period.

Stockholders of the Detroit Steel Products Co. have approved a change in capitalization whereby the authorized capital stock will consist of $4,000,000 preferred stock of $100 par value and 250,000 shares of common stock no par value. Of this amount $2,132,600 preferred and 142,176 shares of common will be exchanged for the $3,544,400 common now outstanding.

The Wickwire Spencer Steel Corporation reports profit of $230,061 after costs and expenses for May, making a total of $1,321,500 for the five months period ended May 31. Sales during the month totalled $2,679,463. Surplus stands at $4,528,601.

For the six months ended May 31 the Hudson Motor Car Co. reports gross profits of $7,882,394 from sales and $148,169 from other income. Net income of $4,446,039 was transferred to surplus account, after deductions for expenses, depreciation and federal taxes. With a surplus of $5,289,475 on Dec. 1, 1922, the net income for the six months made a total of $9,735,514, from which $1,800,750 was appropriated for dividends during the period.

The board of directors of the Pere Marquette Railroad Co. recently voted to appropriate $1,500,000 for two new car ferries, which will operate between points on the Michigan and Wisconsin shores of Lake Michigan with headquarters of this service at Ludington, Mich.

The Bay Verte Machinery Supply Co., Green Bay, Wis., has changed its corporate style to the Bay Verte Machinery & Supply Co. The capital stock at the same time was increased to $50,000.

Crucible Steel Co. Pays Dividend on Common

The Crucible Steel Co. of America resumed payments on common stock June 18 by declaring a quarterly dividend of 1 per cent payable July 31. Payments on common stock were suspended Jan. 31, 1922. Horace S. Wilkinson, chairman of directors, reported unfilled tonnage at the highest point in two years. He expects that the normal in production will soon be reached. Net profit over the last six months was $1,677,390, and earnings for the last quarter were at the rate of $9 per share on common stock, after providing for the preferred.

Current Metal Prices

On Small Lots, Delivered from Merchants' Stocks, New York City

The following quotations are made by New York City warehouses.

As there are many consumers whose requirements are not sufficiently heavy to warrant their placing orders with manufacturers for shipments in carload lots from mills, these prices are given for their convenience.

On a number of items the base price only is given, it being impossible to name every size.

The wholesale prices at which large lots are sold by manufacturers for direct shipment from mills are given in the market reports appearing in a preceding part of THE IRON AGE under the general heading of "Iron and Steel Markets" and "Non-ferrous Metals."

Iron and Soft Steel Bars and Shapes

Bars:	
Refined iron bars, base price	3.54c.
Swedish bars, base price	7.50c.
Soft steel bars, base price	3.54c.
Hoops, base price	5.19c.
Bands, base price	4.39c.
Beams and channels, angles and tees 3 in. x ¼ in. and larger, base	3.64c.
Channels, angles and tees under 3 in. x ¼ in., base	3.54c.

Merchant Steel

	Per Lb.
Tire, 1½ x ½ in. and larger	3.60c.
(Smooth finish, 1 to 2½ x ¼ in. and larger)	4.10c.
Toe-calk, ½ x ⅜ in. and larger	4.60c.
Cold-rolled strip, soft and quarter hard	7.50c. to 8.50c.
Open-hearth, spring-steel	5.00c. to 7.50c.
Shafting and Screw Stock:	
Rounds	4.40c. to 4.65c.
Squares, flats and hex	4.90c. to 5.15c.
Standard tool steel, base price	15.00c.
Extra tool steel	18.00c.
Special tool steel	23.00c.
High speed steel, 18 per cent tungsten	75c. to 80c.

Tank Plates—Steel

¼ in. and heavier	3.64c.

Sheets

Blue Annealed

	Per Lb.
No. 10	4.59c.
No. 12	4.64c.
No. 14	4.69c.
No. 16	4.79c.

Box Annealed—Black

	Soft Steel C. R., One Pass Per Lb.	Blued Stove Pipe Sheet Per Lb.
Nos. 18 to 20	4.45c. to 4.95c.	.....
Nos. 22 and 24	4.50c. to 5.00c.	5.25c.
No. 26	4.55c. to 5.05c.	5.30c.
No. 28	4.65c. to 5.15c.	5.40c.
No. 30	4.85c. to 5.35c.	.....

No. 28 and lighter, 36 in. wide, 10c. higher

Galvanized

	Per Lb.
No. 14	4.75c. to 5.25c.
No. 16	4.90c. to 5.40c.
Nos. 18 and 20	5.05c. to 5.55c.
Nos. 22 and 24	5.20c. to 5.60c.
No. 26	5.35c. to 5.85c.
No. 27	5.50c. to 6.00c.
No. 28	5.65c. to 6.15c.
No. 30	6.10c. to 6.65c.

No. 28 and lighter, 36 in. wide, 20c. higher

Welded Pipe

Standard Steel			*Wrought Iron*		
	Black	Galv.		Black	Galv.
½ in. Butt...	—41	—24	½ in. Butt...	— 4	+19
¾ in. Butt...	—46	—32	¾ in. Butt...	—11	+ 9
1-3 in. Butt..	—48	—34	1-1½ in. Butt.	—14	+ 6
2½-6 in. Lap.	—44	—30	2 in. Lap....	— 5	+14
7-8 in. Lap..	—41	—11	2½-6 in. Lap.	— 9	+ 9
9-12 in. Lap.	—34	— 6	7-12 in. Lap..	— 3	+16

Steel Wire

BASE PRICE* ON NO. 9 GAGE AND COARSER	Per Lb.
Bright basic	5.00c.
Annealed soft	5.00c.
Galvanized annealed	5.65c.
Coppered basic	5.65c.
Tinned soft Bessemer	6.65c.

*Regular extras for lighter gage.

Brass Sheet, Rod, Tube and Wire

BASE PRICE

High brass sheet	19¾c. to 20¾c.
High brass wire	20¼c. to 21¼c.
Brass rods	18 c. to 19 c.
Brass tube, brazed	27¾c. to 28¾c.
Brass tube, seamless	25½c. to 26½c.
Copper tube, seamless	27 c. to 28 c.

Copper Sheets

Sheet copper, hot rolled, 23½c. to 24½c. per lb. base.

Cold rolled, 14 oz. and heavier, 3c. per lb. advance over hot rolled.

Tin Plates

Bright Tin		Coke—14 x 20	
		Prime	Seconds
Grade "AAA" Charcoal 14x20	Grade "A" Charcoal 14x20	80 lb..	$6.80 $6.55
		90 lb..	6.90 6.65
		100 lb..	7.00 6.75
IC..	$11.00 $9.75	IC..	7.15 6.90
IX..	12.25 11.00	IX..	8.15 7.90
IXX..	13.50 12.25	IXX..	9.15 8.90
IXXX..	14.75 13.50	IXXX..	10.15 9.90
IXXXX..	16.50 14.75	IXXXX..	11.15 10.90

Terne Plates

8-lb. coating, 14 x 20

100 lb.	$7.00 to $8.00
IC	7.25 to 8.25
IX	8.25 to 8.75
Fire door stock	9.00 to 10.00

Tin

Straits pig	43c.
Bar	50c. to 55c.

Copper

Lake ingot	17½c.
Electrolytic	17 c.
Casting	16¾c.

Spelter and Sheet Zinc

Western spelter	7½c.
Sheet zinc, No. 9 base, casks	10¼c. open 10¾c.

Lead and Solder*

American pig lead	8¼c. to 8¾c.
Bar lead	12c. to 13c.
Solder, ½ and ½ guaranteed	32c.
No. 1 solder	30c.
Refined solder	26½c.

*Prices of solder indicated by private brand vary according to composition.

Babbitt Metal

Best grade, per lb.	75c. to 90c.
Commercial grade, per lb.	35c. to 50c.
Grade D, per lb.	25c. to 35c.

Antimony

Asiatic	8c. to 8½c.

Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), in ingots for remelting, per lb.	32c. to 33c.

Old Metals

Business is very quiet and the market is practically unchanged. Dealers' buying prices are nominally as follows:

	Cents Per Lb.
Copper, heavy crucible	14.50
Copper, heavy wire	13.50
Copper, light bottoms	11.50
Brass, heavy	8.50
Brass, light	5.50
Heavy machine composition	11.25
No. 1 yellow brass turnings	7.50
No. 1 red brass or composition turnings	9.00
Lead, heavy	6.25
Lead, tea	5.25
Zinc	4.25